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CLEANINGS IN Bee Culture

VOL XXXV MARCH 1907 NO. 5



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# GLEANINGS

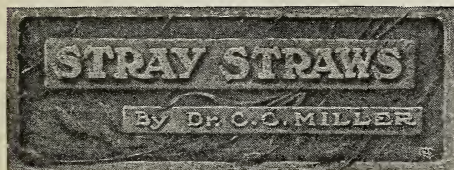
## IN BEE CULTURE

A Journal Devoted to Bees, Honey, and Home Interests  
Illustrated : Semi-monthly : One Dollar per Year  
Published by The A. I. Root Company, Medina, Ohio

Vol. XXXV.

MAR. 1, 1907.

No. 5.



SPEAKING of propolis, p. 262, is it not generally the resinous substance from the buds of trees? Any thing approaching that nature would naturally be used. [I believe you are right.—Ed.]

IN CELLAR is where I am keeping some section honey. I've always called a cellar the worst place to keep honey, but this keeps beautifully. What has dripped, instead of being candied is thick, tough, and stringy. The secret of it is that it stands close beside the furnace.

"THE EXPERT bee-keeper can doubtless get along without" bottom starters, p. 232. Kind o' bars me out of the list of expert bee-keepers, doesn't it? [We are sorry to put you out in the cold, so let us try again. How will this do? "Some expert bee-keepers can doubtless get along without bottom starters."—Ed.]

AN OBJECTION by some to divisible brood-chambers is that the space between sections interferes with the queen. I don't believe that objection is valid, for every spring I have colonies in two stories of Langstroth frames, and the queen seems to have no trouble occupying both stories. Certainly they should have no trouble with shallow frames.

THE ADVICE given in GLEANINGS, Feb. 15, as to making a business of bee-keeping, is wholesome and sound. Simmered down it's a good deal like this: If money is your god, and you are living only to get all you can of

it, let bees alone. If you thoroughly enjoy working with bees, and want to get all the enjoyment out of life you can, then wade right in.

ARTHUR C. MILLER, in *American Bee-keeper*, says that a field-bee on returning with a load "does not give her load to one of the younger or nurse bees, but puts it directly into the cell. From this it is taken by other bees and ripened and redeposited elsewhere, or reconsumed." "Whether the cell be empty or partly filled, the bee enters it feet up and back down."

SOME SUCCEED with a sheet of foundation filling the entire section, and some fail, p. 265; I wonder if it isn't this way: If the sheet is fastened at the sides as well as top and bottom, it works all right; if fastened only at top and bottom, it's sure to buckle. [Yes, that is what we meant. The sheet of foundation that filled the entire section should be fastened to all four sides, and then the wax should be "thin" not "extra thin."—Ed.]

DURING the calendar year 1906 the people of this country consumed 6,415,389,120 lbs. of sugar. In 1870 the per capita consumption was 35 lbs.; in 1880, 43; in 1890, 53; in 1900, 65; in 1906, 75. [You are mistaken, doctor, this wasn't all sugar. Some of it was lime, sulphuric acid, grape sugar (glucose), indigo from coal tar, salts of tin, etc. Both sugar and molasses received a terrific blow by the passage of the pure-food law.—W. K. M.]

A VIVID PICTURE of dishonest commission work is given on p. 235. Honest commission men wouldn't do that sort of thing; but I have in mind one case in which a man whom I've always regarded as square did what was hardly the square thing. He quoted a certain price in "Honey Markets," but when honey was offered him he replied that he was stocked. In that case quoting a price was misleading. [We should be glad to get



definite cases like these; for if such are published, even without the names, those responsible will be more careful in the future how they deal with the producer, whose interests we feel bound to protect.—Ed.]

QUITE RIGHT you are, I think, Mr. Editor, p. 156, in believing that the direction in which the hive faces has little to do with the amount of honey produced. Yet your argument that the sun is brightest in the middle of the day, if it favors any thing, favors the northern entrance. For that northern entrance gets the benefit of the sun at the two cool ends of the day, and in the middle of the day it's hot enough anywhere. A little as the darkey said, "De moon am more useful dan de sun for it shines in de night when it's dark, and de sun shines only when it's daylight."

"HOW WOULD honey and butter frozen together answer during the winter as a food for the goods?" page 239. Why "frozen," friend Morrison? I never tried the freezing, but I've eaten a good deal of it thoroughly mixed (first warmed), and it's fine. Try anywhere from one to eight ounces of honey to a pound of butter. [Freezing the honey and butter was suggested to enable us to sell the combination at the same price as butter—in the same package as the latter is usually sold, and *by the same men*, thereby greatly widening the market for honey. Of course I would label it honey and butter—just what it is. I prefer as much honey as butter.—W. K. M.]

BAKING or roasting in fireless stoves is a thing I had studied over, and supposed it was impracticable until given by H. H. Root, p. 156. No, Huber, I'm pretty sure no one else has given any thing of the kind before. It's great. The one objection to a fireless stove was that it could be used only for boiling; and now you have done away with that. The best bread in the world is probably that baked in an out-oven. A fire is built in the oven, swept out, and the hot bricks do the rest. Why not have heated soap-stones or fire-bricks? Have an asbestos lining so as not to burn your hay or excelsior; put in your hot stones, and your chicken in a self-baster, and go about your business.

GERMAN PRICE LISTS offer 5 and 10 pound packages for sending honey *by mail*. Absurd that I can send a 10-pound package all the way to Germany for less than I can send it to the next town, five miles away. When we get to electing our Senators by the direct vote of the people we may have things different. [If President Roosevelt had not so positively given out that he would not again run for the presidency, we might hope that some of these needed reforms, through the action of his "big stick," would be brought about. Yes, the time is coming, and must come, when our Senators will be elected by the direct vote of the people. When that is done, and a good big brainy President with "the big stick" is in the chair, the millennium (in a political way) will be at hand. God speed the day.—Ed.]

FOR A HIVE-STAND I'd like to try a pair of triangular prisms of cement or stoneware, each prism perhaps three inches longer than twice the width of a hive. Lay the prisms on the ground parallel to each other. Level them, and set on them a pair of hives. Resting on the sharp edges of the prisms, I should expect the bottom-boards to last about twice as long as when set on flat board stands. [Your scheme is not bad. Such cement prisms could be constructed very cheaply. All one would have to do would be to make a wooden V-shaped trough of suitable size, pour in the mixture, and, when it sets, carefully dump it out. To facilitate the operation the trough should be greased with crude oil; and after each "cast" it should be scraped and reoiled. During winter weather, when the bee-keeper has nothing else to do he could make up quite a number of these forms.—Ed.]

MUCH INTERESTED in that  $8 \times \frac{1}{2}$ -inch winter entrance, p. 246. Would you change it for a very strong or for a very weak colony? How would a  $4 \times \frac{1}{2}$ -inch entrance do? In the  $8 \times \frac{1}{2}$  entrance do you prefer the  $\frac{1}{4}$ -inch down at the floor or at the top of the  $\frac{1}{4}$  space? [The size,  $8 \times \frac{1}{2}$  inch, is for the average-sized colony. Any thing under the average has a proportionally smaller entrance, the reduction being made in the length. Any thing over the average will have a larger entrance. But in all cases we preserve the depth  $\frac{1}{4}$  so that we may more successfully resist the encroachments of meadow-moles and mice at outyards. Our experience has shown that half-inch entrances will let in some mice, and so will a  $\frac{3}{8}$ -deep one that the pests have gnawed. At some of our outyards we have had some four or five colonies, the combs of which were literally riddled and the colonies destroyed.—Ed.]



WE are making a strong effort to mail GLEANINGS earlier than heretofore, and we also hope to wrap each copy so that it will reach each subscriber without damage.

#### INDOOR WINTERING AT MEDINA.

THIS is showing up somewhat better than it did earlier in the season. Remember that the colonies are on ventilating hive-stands *a la* Hershiser. At first the conditions seemed to be unfavorable; but after providing a little more ventilation, and dividing the bees into two cellars, the conditions improved very materially. The bees are quiet, and there is no indication to show that there will be any

great loss, if any, in wintering. Bees are all shut within the bottom-board.

Perhaps we should explain that, within two or three weeks, we have inspected Mr. Hershisser's bee-cellar wherein he has his bees confined on this special bottom-board. As he reports, the conditions were decidedly favorable. There were no dead bees on the cellar-floor; and what there were, were on the individual floors of the hives. But the evidence shows that the temperature had not gone as high as had that in our cellar, where the bees had been getting uneasy early in the season—that is to say, he had been able to *control* temperature and at the same time provide ventilation.

#### FOUL-BROOD LEGISLATION FOR INDIANA.

THE following, received from Geo. W. Williams, President of the Indiana State Bee-keepers' Association, issuing a call for help in this matter of foul-brood legislation, should receive the prompt and hearty coöperation of all the bee-keepers of the Hoosier State:

The bee-keepers of this State met at Indianapolis on the 6th, and organized a State Association with the undersigned as President; C. M. Scott, of Indianapolis, Vice-president; Jay Smith, of Vincennes, Secretary; and Walter S. Couder, of Indianapolis, Treasurer. A foul-brood-inspection bill was discussed and endorsed. The executive committee ask the bee-keepers of Indiana to do two things, and do them promptly. First, sit right down *now* and write to your Representative and Senator, asking them to support this bill. You can do this with very little trouble; and as the bill entails no expense whatever on the State, but asks for a tax of one cent per colony on the bees of the State to pay all expenses incurred, all that is necessary is to show the legislature that this is wanted by a considerable body of the people, and they will be free to pass it. Do not neglect this. The time is short.

The second thing the committee asks is for each bee-keeper in the State to send \$1.00 to any one of the officers for enrollment in the association, which includes membership in the National Association. We have plans on foot which make it highly desirable to have a large enrollment.

I should like to have reports from each county in the State in regard to—1. Has foul brood made its appearance in your vicinity? and 2, if so, how long has it been known to exist, and to what extent has it injured the business? You will please address answers to these last inquiries directly to me, but you can send the association fees to either of the officers, as most convenient to you. Do not delay, as the case demands immediate attention.

Redkey, Ind. GEO. W. WILLIAMS, Pres.

#### HOW THE NEW PURE-FOOD LAW HAS INCREASED THE DEMAND FOR HONEST GOODS.

THE *American Grocer*, an acknowledged authority on food stuffs, has this to say:

Reports from every direction are that there is a surprisingly better demand from consumers for high-grade goods. The people are discriminating against inferior food products or such as are of debatable or questionable character. They are acquiring the label-reading habit and are more inquisitive than usual as to quality. It has always been the claim of the *American Grocer* that the sale of cheap and doubtful products tended to decrease and imperil the demand for the finest goods. Until lately it has been a hard task to find a retail store that carries absolutely pure jams, jellies, preserves, or catsup. The food law has had a moral effect that is full of promise for the manufacturer and dealer in meritorious food products.

As pure honey comes under the class of

"high-grade goods" we may expect an increased demand for it, and therefore better prices.

The *New York Journal of Commerce*, another authority, has this to say:

Said a broker in lard goods: "It is impossible to tell how much the pure-food law has increased the consumption of pure lard, especially leaf lard, unless one knew how much the packers used to adulterate their so-called 'pure leaf lard' sold as such. But I have known lard made without any part of lard in the composition, neither cotton oil, that was sold as pure lard under the old law. All this is now stopped, and the consumption of pure lard is much increased, or that of 'pure lard' and 'pure leaf lard' much decreased."

And, again, it observes:

The new pure-food law promises to work numerous revolutionary changes in the confectionery trade, not the least blessed of which will possibly be the elimination of the tons and tons of cheap candies which have for years tickled the palate and raised Cain with the digestion of the nation.

What is true of pure lard and pure candy must necessarily be true of pure honey. We are sorry some of our honey-men can't see it the same way.

#### A RIDER TO WEAKEN THE EFFECT OF THE NEW NATIONAL PURE-FOOD LAW.

FOR some little time there has been organized in Washington what is known as the "People's Lobby," which has for its object the detection of ulterior motives on the part of public men. It has just called the attention of all people to a determined flank attack on the national pure-food law that has just passed the House of Representatives after a memorable fight. Here it is:

Representative Tawney, of Minnesota, succeeded in having a restriction attached to the appropriation made for the enforcement of the law as follows: "Provided, that no part of this sum shall be used for the payment of compensation or expenses of any officer or other person employed by any State, county, or municipal government." In other words, Uncle Sam must not coöperate with or get assistance from any city, town, or State in enforcing pure-food laws. Our readers will see the point. Representative Tawney was ably assisted by three other Representatives—Fitzgerald, of New York; Sullivan, of Massachusetts, and Crumpacker, of Indiana. All friends of pure food are asked to note the conduct of these men who are *supposed* to represent the people. It is hoped the Senate will cut this "joker" out. Write at once to your two United States Senators, asking them to cut out the Tawney rider in the pure-food appropriation, for the thing has passed the House.

#### THE ENEMIES OF THE NATIONAL PURE-FOOD LAW IN AND OUT OF CONGRESS.

As was to be expected, the national pure-food law has aroused intolerant and unscrupulous enemies whose business has been jeopardized by it. The whisky, glucose, and oleo interests are seemingly the most powerful; but the people, the farmers par-



ticularly, are determined to act in their own behalf. National Representative Wadsworth, of New York, has been already retired to private life by the farmers of his district, and Washington will see him no more.

Senator Dryden, of New Jersey, who expected to occupy a seat in the Senate for the rest of his lifetime, has been relegated to the same fate by the farmers of his State, urged on by such journals as the *Rural New-Yorker* and the *Country Gentleman*. This shows that the farmers are doing their own thinking now. Both were friends of oleo and the Chicago packers, and opposed to pure-food laws.

The fate of these gentlemen seems to have been lost on Representatives Crumpacker, of Indiana, and Tawney, of Minnesota, who seem to be leading the fight against pure-food laws by cutting down or withholding the necessary money appropriations for enforcing the law as it should be. There is nothing in the nature of politics involved here, but simply a question of insuring fair dealing between man and man.

Our subscribers in Indiana and Minnesota should lose no time in letting their respective representatives know their mistake, and that, if they persist in their policy of fighting pure food, they also will be retired by the storm of votes from farmers and bee-keepers whose interests have been affected.

#### SIZE OF ZINC PERFORATIONS.

In response to our request for reports on perforated zinc, as now made with holes  $\frac{1.63}{1000}$  inch wide, quite a number have written stating that it would be better to have the perforations larger. Some aver that they would prefer to have an occasional queen go through than to have the perforations so small that none can pass, making it more difficult all the time for all the bees during the height of the honey-flow to get through the metal. In other words, they consider the slight disadvantage of having a few queens pass the metal is more than offset by the convenience of loaded bees; and one writer in particular feels satisfied that this larger perforation will enable more honey to go into the supers.

This same question was brought up at the Brantford convention, and, quite to the surprise of the editor, who was present, a majority of the bee-keepers expressed themselves as decidedly in favor of having the zinc its present size. Among them was that extensive extracted-honey producer, Mr. R. F. Holtermann, who uses a cross of Italian and Carniolan blood. It has been said that Carniolans are slightly larger than Italians; and even if this be true, Mr. Holtermann would object seriously to increasing the size of the perforation. He is a large producer, and expressed himself as believing that the increase in size would be a positive disadvantage to him, without any compensating gain.

The makers of the standard zinc in this country would like to get the truth, cut where it may; and whatever the majority of

bee-keepers call for, *that* they are prepared to give them off from their machine, notwithstanding a new set of dies might cost some \$600 or \$700. The perforated metal as now sent out has been used for the last five or six years, and during all that time there has been no complaint as to the size of the hole.

Perhaps it might be advisable to make two brands of metal, having two sizes of holes. But that would make complications; and what is best for one bee-keeper ought to be better for all of us.

If top entrances are used the field bees learn not to pass through the zinc, says Mr. Morrison. Some say this is a grand preventive of swarming, and it ought to be, as the brood-chamber is deprived of a great number of bees that otherwise would crowd it to the point of swarming.

#### GIVE US A SQUARE DEAL; HOW OTHER INDUSTRIES HAVE SUFFERED FROM THE SLANDER OF YELLOW NEWSPAPERS.

At the present time the New York newspapers are creating a *furor* over the condition of their milk supply, which has hitherto been considered a model. The result is, each paper is vying with its competitors in condemning the poor dairymen, who probably know a great deal more about milk and its care than city editors and reporters. For example, one paper roundly asserted that, of the cows supplying the metropolis with milk, at least 300,000 were affected with tuberculosis. As a matter of fact, this number is not needed to furnish that great city with *all* its milk, so that more than 100 per cent of New York's cows must be diseased.

This is only a sample of the statements made. This leads the *National Stockman and Farmer* to remark, "The worst feature of this or any other milk or food agitation is the complete disregard of the rights of the producer. His product is slandered regardless of its quality, and his market is injured through the fears aroused by exaggeration and falsehood. It is about time the daily press remember that the producing class has rights as well as the consuming class."

The honey-producers have much sympathy for the dairymen, as they too have been systematically slandered by the sensation-loving newspapers. It may yet be necessary to enact laws for the protection of honest goods from slanderously inclined newspapers.

#### IS THE PRESENT SCHEME OF HONEY QUOTATIONS ONE THAT WORKS TO THE BEST INTERESTS OF THE HONEY-PRODUCER?

FOR some time the conviction has been forcing itself on us that our present system of placing market quotations before our readers is not calculated to give bee-keepers the best figures for their product. The tendency is to keep prices down rather than to push them up. With no desire in the least to discredit any commission man or honey-merchant, there is no denying the fact that it is



always to the interest of such persons to buy at as low a price as possible, and, consequently, such persons quote the lowest prices that will bring the honey to their market. Then to be fair with these people we must admit that they can hardly afford to be in a position to "bull" the market; but they must, on the other hand, "bear" it. Why should Mr. Commissioner have such a great love for the bee-keeper that he should talk about the fact that prices ought to go higher against his own interests? and why should he ever intimate that there is any danger of their going higher? If he is seeking prospective lots of honey he will not be fool enough to "bull" the market to a point where he will get a lot of goods on hand, and then have to sell below the market. He would be dubbed a first-class fool and go into bankruptcy soon. If he buys outright he will be the loser. If he buys on commission, no amount of "explanation" as to his "good intentions" will satisfy the bee-keeper, who, having been baited by his higher quotations, shipped to that market only to find his net returns away below what he had reason to expect.

We have said that the present scheme of furnishing quotations has a tendency to "bear" the market rather than to "bull" it. When consignments come in liberally, the market begins to drop. If it drops in one market, other markets fall to a greater or less extent in sympathy.

Now having shown the difficulty, what is the remedy? If any reader or association of bee-keepers can throw any light on this intricate proposition, we shall be glad to hear from them.

But as illustrative of the very condition we have been describing, note that some commission men do not believe that the pure-food law is going to advance prices. If they did believe it, the honey market would become firmer, and then, perhaps, weaker after they bought. We must be fair to these men. They will, and you would too, endeavor to protect yourself.

#### BEESWAX IN THE ARTS, AGAIN.

Under the action of the pure-food law, beeswax will have a much larger use than ever before. Indeed, there is already a notable increase in the price. Druggists (and there are thousands and thousands of them in the country who formerly used paraffine, ceresin, and the like) will now be *compelled* under the new law to use nothing but pure beeswax, and the amount will run up into the hundreds of thousands of pounds. But what do druggists do with wax? They use it for making plasters, certain kinds of ointments, and for certain medicines known to the pharmacopœia.

There has always been a large use for paraffine and ceresin for making candy; but now these can be used no more, while beeswax will be permitted as before. These two industries alone will increase the demand for the product of the hive to a great extent; and while we do not expect an immediate advance in the price of wax over and above

what has already taken place, the time is no far distant when bee-keepers with dark honeys will do well to consider the possibility of making wax-production a business.

Under the action of the new pure-food law, the bleached table sugars will gradually go out of market, and a cheaper and better substitute in the form of unbleached cane sugars, costing all the way from 1 cent to 1½ cents less, will take their place. These sugars are richer in sweetness; and, taking into consideration their reduced price, it would not be at all strange if the cost of feeding bees for the production of wax, or for any other legitimate purpose, will be from 30 to 50 per cent less; for it must be understood that these unrefined cane sugars will go further than the so-called refined sugars bleached with chemicals that extract some of the flavor as well as some of the sweetness out of the article, substituting therefor a deleterious residue that can't be eliminated.

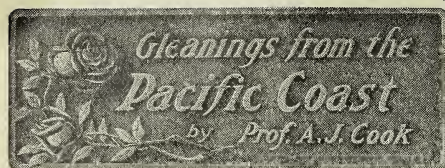
The new pure-food law will have no effect one way or the other on the use of paraffine, ceresin, and the like in any compound or mixtures that do not belong either to the food or drug classes. Electrotypers can use a substitute for taking impressions, although the great majority, we understand, prefer to use pure beeswax, even at a higher price. Natural-wood finishers can still use paraffine and ceresin; but a good many will tell you that there is nothing that will compare for that purpose with pure beeswax. As we formerly pointed out in these columns, the first mentioned will give a greasy smeary finish, while our product will give a highly polished surface—one that will stand wear as nothing else will; and such a finish is cheaper than hard oil—not cheaper by the gallon, but cheaper to apply.

The Roman Catholic Church uses large quantities of beeswax in the form of candles. That organization will not tolerate paraffine, ceresin, nor any of the mineral waxes, all of which give off a nasty greasy odor in candles while burning, while one made of beeswax leaves a delightfully permeating perfume. Then, too, the burning of mineral wax leaves a deposit that injures the pictures, while beeswax mellows and preserves them.

There are certain grades of blacking, harness oils, and lubricants that require pure beeswax in their manufacture. A blacking using beeswax will stand more dampness than that made of any other substance.

The electrical supply business is a consumer of our product. The windings of the wire are soaked in paraffine or beeswax—preferably the latter, because it seems to be less affected by extremes of heat and by moisture. Pattern-makers are also users of our article. The profession of dentistry takes a large quantity of pure wax every year, reference to which has already been made elsewhere.

In all the arts, paraffine, ceresin, and certain other mineral waxes can be used; but, if we are correctly informed, none of them have all the desirable qualities of the product from the hive.



#### BREATHING-SYSTEMS IN INSECTS.

We have it from good authority that "man can not live by bread alone." This is just as true of insects. Indeed, oxygen may be said to be the most important food of all animals. Even the muscles that we described in our last paper, which, as we saw, are so active and efficient in insects, can not work without food, and no food is so immediately important as oxygen. I mentioned in the last article that the muscles of insects are quicker to act, and stronger in proportion to size, than those of any other animal, even than those of man himself. We should expect, then, if oxygen is so important to feed active organs, that the insect anatomy would have this fact in view, and we should expect the respiratory system to be in a very high state of development.

#### AIR-TUBES INSTEAD OF LUNGS.

In insects we do not find lungs, though in one of the groups of this great branch of animals, the spider class, we do find lung-like sacs for purposes of respiration. But in insects, and so in our bees, we find lungs replaced by a very intricate and extended system of air-tubes. In studying the anatomy of insects, nothing is more interesting than tracing this branching system of respiratory tubes.

There are two main tubes, one situated on each side of the body, running lengthwise from the head to the tip of the abdomen. Short tubes at right angles to these main tubes connect these with the outside of the body, and at the outer end of these short tubes are the several breathing-mouths, or spiracles, which are often seen with the naked eye. Any one who has closely noticed the large green tomato caterpillar — larva of the tomato sphinx — has noticed the large spiracles on the side of the abdomen. These are different in color from the body wall, and so are quite conspicuous. It is easy to see that they are openings to tubes.

#### VALVES OF THE SPIRACLES.

These spiracles are doubly guarded by valves which prevent dust, etc., from entering the sensitive air-tubes. First there is a hair valve, which acts as does the hair in our own noses, to strain the air, if we may so speak. Then there are muscular valves, by the aid of which the insects can close these tubes at will. In this respect the insects may be said to be ahead of us, though we can make our thumb and finger act as effectively in guarding our own respiratory apparatus.

The great lateral tubes already referred to, as they pass lengthwise of the body, branch

and rebranch, and thus reach intimately every part of the body. These vessels at their termination are very small, and under the microscope are exceedingly beautiful and interesting.

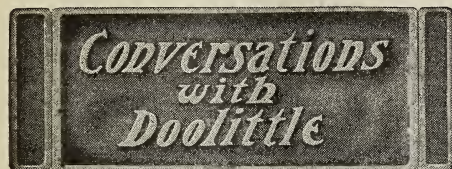
#### STRUCTURE OF THE AIR-TUBES.

What adds to the beauty of these air-tubes is their peculiar structure. If we should take a round stick and wind it closely with a fine wire, and then remove the stick without disturbing the wire, the wire would not be unlike these air-tubes. This winding thread can easily be seen when looking at the air-tubes with a microscope; and if the tubes are broken, as they always are more or less, we always notice the waving thread reaching out from the broken tube. Of course, there is an epithelial lining to this spiral thread. This epithelial lining is made up of cells, and it is the function of these cells to take the oxygen from the air in the tubes to the blood of the body of the insect, and at the same time to remove the carbon-dioxide from the blood to the air-tubes when it is passed off. This arrangement of cells and their action does not differ from that which takes place in our own lungs. It is simply osmosis, which term refers to the passing of liquids or gases through an organic membrane when such membrane separates those of a different character. In our own lungs the osmosis is very rapid, and the extent of the membrane is something tremendous. In the great spread of membrane in our lungs Nature has shown her disposition to do the best to keep us alive and well. If we would always be as careful to provide good ventilation by open doors and windows in our sleeping-rooms, or, better still, by sleeping out of doors, as we do, many of us, practically, here in California, there would be much less of ill health and trouble in this world than we find to-day. The insects have even a more remarkable spread of membrane, and nearly always sleep out of doors, and we can not wonder at their sprightly activity and apparent vigor. The work done by our bees is really stupendous, and puts in the shade the labor of the most strenuous of our kind, and so we may well rejoice at the admirable breathing apparatus of our pets of the hive. We have all noticed how admirably the bees ventilate their hives. We have our patent ventilators. The bees need no patent, for their method of ventilation, as they fan at the hive entrance, leaves little to be desired. We also have noticed how quickly the bees die if the free air is shut away from them.

One practical point is worth mentioning here. The bees ventilate so effectively, as they fan at the hive entrance, that it is found entirely unnecessary to arrange for any further ventilation. It is, without doubt, best to have only the one opening to the hive. In the bee-tree or rock cavity the bees have but this one opening, and yet from their great activity they must have great drafts of pure air, and so they have developed their ventilating habit, which is very perfect. Without doubt we serve them best when we



leave the matter of ventilation entirely with the bees, only arranging to give them an ample opening.



#### GETTING READY FOR THE SURPLUS.

"Say, Mr. Doolittle, I came over to have a little talk with you about getting ready for the surplus honey during the season of 1907, if we should have such surplus. Will you tell me something about this?"

"Well, Mr. Jones, the first thing to do is to fix all of your surplus arrangements, and have them all in apple-pie order when the harvest arrives; and in order that they may be thus, the best time so to fix them is right now before the rush of work comes on in the spring."

"I presume you are right in this matter; and as I have some time at my command I came over to ask you how best to do this. Will you tell me?"

"The first thing to do is to get around all your supers which you used last year and clean them of propolis or any bits of wax that may be on them, and repair any which may be out of repair from the work of last season."

"Yes; and what is the best way to clean these supers where they are badly covered with propolis?"

"My way is to take an old dull chisel and grind the edge and sides so that all have a square corner which is as sharp as a square corner can be made. Then do the work at a time when the mercury stands at from ten to twenty degrees above zero, wearing overcoat and mittens to keep warm if necessary."

"Why do you want it so cold?"

"Because the propolis is very brittle then, and will break and fly off before the chisel, as it will not do with a temperature which would be agreeable for you to do this work as to warmth."

"I see now. But how do you use the chisel?"

"On all flat surfaces where the sides of the chisel can be used, I lay the sides down flat on the material to be scraped, when with a drawing sliding motion, from side to side, I pass the chisel quickly over the smeared parts, and the corners of the chisel cause the propolis or wax to fly off in great shape, so that it takes less time to clean a super than it does to tell how it is done. Then if there are any corners where the flat sides of the chisel can not well be used, these are cleaned with the end of the chisel and the corners at the point of the same. In this way, and in a cool day, the supers can be all cleaned in a

few hours. In cleaning, all that need repair are piled by themselves, and those which are in good order piled in another pile. And later on those needing repairs can be taken to a warm room for this work."

"That is all plain. After all are cleaned and repaired, what then?"

"The next thing is to make as many new supers as you expect to need, in addition to the old ones, when you are to go to work making your sections, the material for which you should order and have on hand so you can make the sections during the winter months. Having the sections made, the next work will be putting thin comb foundation in them."

"How much foundation shall I put in each one?"

"That depends somewhat on your means for procuring this. My idea is that it pays well to fill every section nearly full, using the extra thin for this purpose."

"What do you mean by filling *nearly full*?"

"Of course, you know that the foundation is fastened at the top of the section to the wood. There it touches the wood, of course; but after trying many ways I prefer that there be a space of  $\frac{1}{8}$  inch between the foundation and either side of the section, and from  $\frac{3}{8}$  inch to  $\frac{1}{2}$  inch at the bottom."

"Why do you not fill the section entirely full?"

"Whenever I have done this the foundation would buckle and twist in all conceivable shapes while it was being worked by the bees, so that, when finished, we have the most grotesque-appearing honey ever looked at."

"But what would you do if you concluded not to fill the sections, as you have told me about?"

"Then I would use starters of foundation unless I had plenty of nice white comb to cut up for starters."

"I do not have the comb. How much foundation would you use for each starter?"

"For starters I cut the foundation into strips two inches wide; then I cut off a piece at one end, following the row of cells, this making this piece come to a point at one end and about an inch across the base at the other end. Now turn the knife so it will follow another row of cells angling across your strip, which will give you a triangular piece of about the right size to help the bees best for starting. Turn your knife so it will cut at the same angle as the first cut for the next, when you will have another triangle as before. In this way keep turning till the whole length of the strip is cut up."

"But doesn't this take lots of time in cutting?"

"It would if you were to cut only one sheet at a time; but when you have decided on the size you want, then you will pile ten, fifteen, or twenty sheets in a pile and cut all at once, so very little time is consumed in this part of the matter."

"Thank you. But how are these starters put on the sections?"

"By the use of one of the foundation fasteners, of which there are quite a number."

"Could I not put them on without a machine?"

"Yes, it can be done that way; and had you only one or two colonies I would do this. But with your 25 or 30 colonies you do not want to do the work that way. Much better cut your foundation sheet by sheet at a time, than fool away your time putting foundation in sections without a foundation-fastener."

"Very well. Having my sections all made and with foundation in them, what next?"

"Put them in your section-holders, of course, and then put the holders in the supers, when the supers are to be piled away all ready to set on the hives at a moment's notice when the honey harvest arrives next June."

"Is that all?"

"No, not if you wish the best success with your bees."

"What else is there to be done with these supers?"

"How many colonies have you?"

"I have 27."

"Then you want to fix 27 supers with bait sections in them."

"What are bait sections?"

"These are the sections which were only partly filled last season, or sections which were not filled and capped over to a sufficient extent so they were salable last fall. You had quite a few such, did you not?"

"Yes. But why do you call them baits?"

"Well, they are not bait sections, only as we use them as such. Did you ever hear of bait, and baiting a hook when going fishing?"

"Certainly. What boy of 17 years has not?"

"Well, as you use worms and what not as bait to entice the fish to come so you can catch them, so you use these partly filled sections left over from the fall before, in each super first put on the colonies at the beginning of the harvest, to entice the bees to enter the super quickly, and much sooner than they would where only the foundation starters are used entirely in any super. These sections cause the bees to enter the supers and cluster on the combs they contain, on the same principle that bees will accept and work on old comb long before they will build comb at the beginning of any honey-flow?"

"Oh! I see now. How many of these partly filled sections do you use in a super?"

"Just in accord with how many partly filled boxes I have. I count up the number I have, then divide them by the number of colonies I expect to have to work for section honey the next season, when I use as many as this gives me to each colony. If you can have from four to twelve for each colony you will be all right."

"But where in the super do you put these bait sections?"

"If I have only four I put them in the center of the super, as there is where the bees will 'draw' in the quickest. If eight, then I put four in each of two section-holders, and then put these section-holders in the

super, so that two or three section-holders of sections with starters come in between them. In this way I get the bees at work, not only in the baits, but in the sections between the baits, and all goes on swimmingly from the start."

"I think I understand now, and I will go home and commence operations at once. Thank you."



#### QUESTIONS AND REMARKS BY VISITORS.

One day a man saw me carrying a Daisy foundation-fastener and asked: "What are you going to do with that thing—make yourself some sauer-kraut?"

"I know why his bees make so much honey. He has a large geranium-bed that his bees live on." (Will some one please quote me prices on geranium honey? I wish to sell only in car lots.)

"Say! my bees have got worms. Nearly every cell has a little white worm curled up in the bottom. Those that have not got worms in them have little worm eggs. What can I do about it?"

Almost any physician can prescribe for worms. But *you* need the dope—not the *bees*.

A lady once asked me to explain the relative merits of the cold-blast and hot-blast smokers. She bought the latter. While using it one day she burned a large blister on her arm. Then she asked me this conundrum:

"In principle of operation, what is the difference between the two smokers?"

I gave it up.

"Well, one is a cold blasted smoker, while the other is a blasted hot smoker."

"Do bees die when they sting you?"

"Yes, sir, they always die instantly. Death is caused from a knock-out spat that they get from my right hand."

"But if left to themselves do they die?"

"If, after committing this overt act, they merely uncouple from their sting, I have never known one to die from that cause. But here is a little conclusion that I should like to jump at: When a bee tears out its sting and leaves a thread attached to it, and then walks off, thereby unraveling most of his internal fabric, I believe we should be excused if we conclude with no further evidence that this is not conducive to the longevity and general prosperity of the bee."



One day three boys came into my apiary. After making a visit of sufficient duration I asked them to go away lest they get stung.

*Smart boy:* "Oh! your bees don't sting."

*Brave boy:* "I hain't afraid."

*Good boy:* "I don't have to."

In order to settle all doubts in less time than it takes to tell it, I walked around with the boys following, till I brought them in front of a hive I knew I could depend upon in time of need. Stepping behind it I raised the hive about an inch and let it down with a bump. The bees responded nicely. One boy acted as if he were mad at himself and was boxing both ears at once. Another spanked himself as though he were trying to hurry himself up. The third had a hole in his stocking, and he was paying strict attention to that, using both hands. I said:

"Boys, don't be rushed off."

But they said they *must* go—they had stayed too long already.

#### A BUTCHER-KNIFE HIVE-TOOL.

I have seen in GLEANINGS a description of a great many hive-tools, but nothing in my estimation that is suitable for the Danzenbaker hive. I have tried several of them, but they seem to be wanting in some particular or other. I am sending you a cut of the tool that I use, and it is all that can be desired. It is simply a butcher-knife of the best quality, with a notch cut in the back of it so it can be used as a hook to pull the spring out of the hive. It is so thin that it can be forced between a super and the hive, and it is strong



enough so that, by giving it a twist, you can pry it loose, no matter how tight it is stuck. By taking hold of the handle and using the left hand on the back of the knife near the point you can easily force it between the frames and pry them apart. It is also an excellent thing for scraping propolis from the frames. Then another excellent feature about it, it is long enough so that it will reach to the bottom of the frames. Then with a twist you can force the frames together at the bottom, ready to insert the spring. I called it my butcher-knife hive-tool, but that was too long, so I just called it the "butch."

#### CAGES OVER ENTRANCES OF HIVES OUT-DOORS.

As to shutting bees in the hive in winter, page 1559, I have had cages on hives out of doors since early in November; and from observations so far I believe them to be a good thing. I hope others will try such a scheme and report result. GERARD KIMBRELL.

[We are not so sure that these wire-cloth cages are going to be a success. See what we have to say on page 83.—Ed.]



#### LOAF SUGAR FOR WINTER FEEDING.

Queen cage Candy Not Suitable; Perforated Zinc Honey-boards—Are They Indispensable?

BY E. W. ALEXANDER.

It was with more than ordinary interest that I read the article of Dr. Lyon on winter feeding, in the Jan. 15th issue of GLEANINGS, with your remarks on the same subject. They recall to memory some sad experiences I had in that line many years ago. It was at the time I bought my first extractor, which I got from father Quinby, one of the first lot that was made in this country. With it I soon found that it was so easy to take honey from my bees that for two or three years I had many light colonies in the fall. I then expected they would fill up their combs with a sufficient amount to winter on, which but few did; and when I found 200 or 300 light colonies late in the season, with not more than enough honey for 30 or 40, then I resorted to all kinds of feeding imaginable. At one time I made a large amount of candy, as Dr. Lyon did, from honey and sugar, and I had the same results. It melted and daubed up nearly 100 colonies so every one died.

Oh, dear! it makes me now feel bad to think of it; but I kept on trying one way and another until at last I struck what I still think is the easiest, quickest, and best way to feed light colonies, either late in the fall or mid-winter, of any way I have ever tried or heard of. It is this:

Make some rims two inches deep, and the size of your hive on top; then take off whatever covering you have over the tops of the frames of combs, and put on one of these rims. Then fill this rim with cut-loaf sugar—the kind that is in cubes about one inch square. Moisten this sugar by sprinkling a very little warm water on it, then cover the sugar with cloth mats so as to retain all the heat from the bees below, that you can, and the bees will soon come up into this rim of sugar, every one that can, and cluster in it and eat it as they require until spring. I have fed a great many colonies in this way, and never lost one. They usually come through the winter in fine condition, even though they had only two or three pounds of honey in their hives in the fall.

One winter I fed two barrels of sugar in this way, with good results.

This is one of the subjects I intended to call the attention of my brother bee-keepers to early last fall; but it slipped my mind un-

til I read the article by Dr. Lyon in the Jan. 15th issue.

Those of you who have light colonies to feed in cold weather, please try this method of feeding; and if you are as successful as we have always been you will never again try to make any candy for winter feeding.

We used to feed some sugar in this way after they were taken from the cellar in the spring, but we now prefer feeding a thin liquid syrup in our feeders for stimulating brood-rearing.

The colonies we have fed with loaf sugar as above described have always been in the cellar. It might not work quite as well outdoors in very cold weather. Still, if they were well covered up I think it would be a safe way to feed.

Feeding in any way in cold weather is rather poor bee-keeping; but it can be done as above stated, with but little trouble and seldom any loss.

With due respect to friend Greiner I must beg to differ with him as to the value of queen-excluders in producing extracted honey. Years ago, previous to their invention, we had much trouble with brood in the extracting-supers, and the large amount of uncapable brood that was usually destroyed when extracting was a serious obstacle in the way of securing strong full colonies, which are always necessary in order to acquire a large surplus. We also lost many valuable queens, as they were frequently shaken or brushed so far from their hives that many failed to return. But with good excluders the brood is all kept out of the extracting-combs and allowed to mature. Therefore we have much stronger colonies to extract from, and, consequently, far more surplus.

Then our queens are safe from harm, which is no small matter when you expect every colony to produce its part of a large surplus.

#### IS THE SIZE OF THE PERFORATIONS CORRECT?

We use the wood slatted excluders with metal strips, such as are now manufactured. We have about 300 excluders with Dr. Tinker's metal, also some 700 of the Root perforation of recent make, which contain holes through the metal as near the proper size. I think, as is possible to make them. I am sure I should not want them a hair's breadth larger or smaller; and, although we have never noticed any trouble with the worker bees passing through, it is very seldom the queen goes through.

As to the different races of bees varying in size, as Editor Root speaks of, I will say our bees are Italians, and have been bred from the best honey-gathering strains we could procure for more than 20 years. I am sure we would not care to produce extracted honey again without excluders, even if they cost five times as much as they do, for we think we get enough more surplus by using them than we could without—more than to pay their cost every every season. As we manage our bees they are worth a great deal

to us; but I can see that, as some manage theirs, excluders would be almost a nuisance. The real value of all these things is in the way they are used.

Delanson, N. Y.

[This loaf-sugar method for winter feeding is a very easy one to put into application. With many of our subscribers it would not be necessary to make this two-inch rim, but use instead the ordinary comb-honey super. If the space above were filled up with a chaff cushion, one would have an ideal arrangement.

When the writer was in Canada he called on Mr. F. J. Miller, of London, Ont. He had tried the queen-cage candy made by mixing powdered sugar and honey into a stiff dough, and had the unpleasant experience of killing a lot of colonies, for the candy absorbed the moisture from the cluster, and softened and ran down on to the frames, daubing the bees and finally killing the colony.

The only way that this kind of candy can be given at all would be in shallow tin pans, where, if it softened, it could not run over and kill the bees. Even then it would be better to use loaf sugar or dry hard candy.

One bee-keeper in Canada said he had been feeding liquid syrup, and he had no unpleasant experience from such syrup stirring up the bees. But in view of the reports we have had, our bee-keeping friends should avoid liquid feed, and use dry sugar or hard candy as we described.

On the subject of perforated zinc, our readers are referred to an editorial elsewhere on that subject.—ED.]

#### THE DEEP VS. THE SHALLOW HIVE.

Calcium Chloride in a Bee-cellar not a Success; the Spelling Reform.

BY C. P. DADANT.

I have read the article on "Horizontally Divisible Brood-chambers," written by Mr. J. A. Green, page 23, in reply to my article to you published in the September 1st issue.

I think neither Mr. Green nor others interested in this matter realize the fact that we are making our observations from a different standpoint. Those who are accustomed to the use of the Langstroth size of frame are comparing one shallow frame with another shallow frame. That is to say, in our comparisons Mr. Green and others are basing their views upon the difference in results between a nine-inch frame and a seven-inch frame, while mine are based upon the comparison between this same seven-inch frame and an 11½-inch frame. In other words, you are comparing two shallow frames with one another. I hold that the deep frame is the only one which may fitly be used for comparison, because the hive which contains this frame is the only hive with which *only one body* is sufficient for all breeding purposes, while it is well established that the average ten-frame Langstroth hive itself is not suffi-



cient for all occasions with very prolific queens.

Again, in order to ascertain whether separate compartments have any influence upon the laying of the queen, it is not absolutely necessary to use divisible brood-chambers. A simple bar through a frame will often show how bewildered a queen is by getting to a wood strip while laying regularly. Do not understand me as saying that all queens will be stopped by a cross-bar, but that often queens are stopped to such an extent that you will find brood on only one side of this bar. This was evidenced to me best in the use of divisible frames, such as we formerly used in queen-breeding, to make nuclei. Such frames have been recommended by Mr. Benton for the making of diminutive hives, and they are very efficient for the queen-rearing business, because they may be taken out of strong colonies in the beginning of the season, and returned to them afterward. In the use of these frames I have very often found brood in only one of the sections and honey in the other. The queen had found the cross-bar, and had stopped there and retraced her steps. So I think it is difficult to deny the fact that a sectional frame interrupts the breeding (or, rather, the laying) of the queen in many instances.

#### CALCIUM CHLORIDE IN CELLARS.

Changing the subject, I read in *Stray Straws* a quotation by Dr. Miller of the proposed use of calcium chloride to dry out beecellars. This thought occurred to my father in the early seventies, and we tried a hundred pounds of this substance in our wintering-cellar. The stuff came in large lumps, and my father went to the trouble of devising a pan with dripping-holes, placed over another vessel. The chloride was put on the upper vessel and was expected to dissolve. Well, when moisture came it began to gather water, and drip, but it was so slow in doing it that most of the calcium was still in lumps when the bees were taken out. It remained in lumps, though the lumps were getting smaller, for six or eight months. It was not till the opening of the next winter that the calcium was found to be all liquefied, and we were so disgusted with its slow change that we threw it away. It is probable that, if we had had it crushed and spread all over the cellar it might have been more efficient; but I venture the assertion that this means of absorbing the moisture of a cellar will never be practical.

#### NEW SPELLING.

And now about the spelling reform, *Stray Straws*, again. You say, Mr. Editor, that GLEANINGS is not big enough to blaze the way for the reform, because large publications do not adopt it. The *Literary Digest* is using it, and has even gone so far as to quote some of the opponents of it in the very spelling that these men oppose. If we are to follow the mossbacks who ridicule the new way, we might as well go back to Shakespeare's time and spell "fish" "fyshe." The greatest argument used against the new

spelling is that it will make every man's orthography look "untaught." I hold it will do just the reverse, for it is quite a nice thing to remember the 300 words and use them properly. I for one can not expect to do it successfully. But I am quite willing and anxious to see this new reform accepted, to blaze the way for the younger generations who will not, I hope, be as foolish as their fathers. The fact is, the reform is now made in spite of all that the conservative public may say, for custom alone is sufficient to coin new words and reform old ones; and not twenty years will pass before everybody gets into the custom, I dare say.

Hamilton, Ill.

[We are glad to get your views on the shorter spelling as suggested by our worthy President; and it is gratifying that so influential a journal as the *Literary Digest* is one of the pioneers in this movement. The publishers, Messrs. Funk & Wagnalls, have probably done as much as or more than any other publishers in the United States to further this reform. But GLEANINGS would hardly feel that it would be wise to adopt it until some more "influential" papers will help to blaze the way.]

With regard to the divisible-brood-chamber hive, there will be some further discussion in which our correspondent is invited to join. As already pointed out, there will be a series of articles from J. E. Hand, of Birmingham, Ohio.—ED.]

#### EXTRACTING HONEY.

How to Avoid Running the Cans Over and Wasting Honey; a Device for Shutting the Gate when a Can is Full, and Ringing a Bell for an Alarm; a Simple and Satisfactory Honey-strainer.

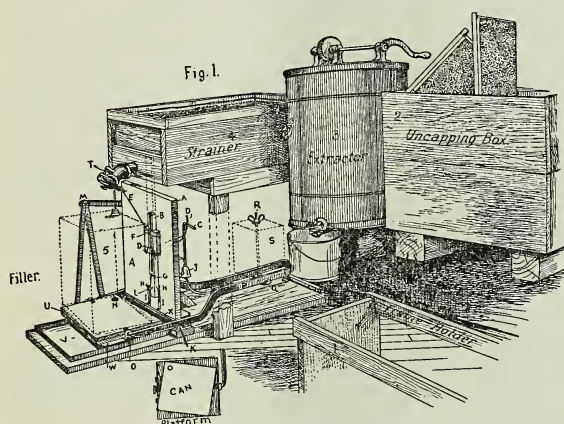
BY R. T. RHEES.

About twenty years ago, in the early days of my bee-keeping, I lost much time, honey, and temper in pouring my extracted honey into cans. I have always practiced thoroughly ripening my honey on the hives before extracting. This thick honey would run into cans very slowly; therefore I used to set the honey to running into the can, and then go on with my extracting, trying to keep watch of my can and run my extractor at the same time. This consumed considerable time, and sometimes, in spite of my supposed close attention, the can would run over and waste honey, and make a muss which had to be cleaned up. This, of course, was very trying on my temper when I was already over-run with work.

To do away with this trouble I invented a machine to look after the filling of the cans. With this machine all the operator had to do was to set the empty can on the platform, raise the honey-gate, and then take the can off when full, and put another empty can in its place, and so on. The machine would look after the filling; and when the can was full it would shut the honey-gate and ring a

bell to let the operator know that the can was full and needed to be replaced by an empty one—something he could do at any time most convenient to himself.

I have two of the automatic can-fillers, for 60-lb. cans, that have been in use about fifteen years, and are now good for many years to come. They have had from one to three cars of honey filled on them nearly every season; and so simple are they in construction, and so faithfully have they performed their duty, that many times I have sent them to outyards with hired help unacquainted with them, and no trouble has resulted. On the other hand, my hired help have often left cans running when quitting, and gone home for the night, trusting to the machine to shut the gate at the proper time and prevent many gallons of honey from running over on to the honey-house floor.



AN AUTOMATIC SQUARE-CAN FILLER.

By looking at the illustrations, the plan will be understood. The operation is simple. When the weight of the honey running into the can becomes such that the weight S is overbalanced, the platform holding the can sinks down. This movement trips the sliding stick B by means of the wire C, and it is jerked down by the rubbers, pulling the cord E and thus shutting the gate T. If it is desired, an alarm may be added by arranging the little bell as shown, to ring when the gate shuts.

Fig. 1 shows my method of arranging a honey-house for extracting. I proceed as follows: Two men work with one outfit—one out in the yard and the other in the honey-house. The outside man arms himself with a Daisy spring wheelbarrow, four or five hauling-boxes, which are made the same size as a ten-frame Langstroth body, only a little deeper, and having a metal bottom to catch the drips from the extracting-combs; two Cogshall bee-brooms; one smoker; one hive-tool to loosen the frames; one bucket of water to soak brooms in; and, if robbers are bad, two robber-cloths to keep the combs covered.

He proceeds by taking two hauling-boxes

on his wheelbarrow, and wheels them into a convenient position at the back of a hive; removes the cover; blows some smoke down between the combs, and, while the bees are running down, loosens the frames with his prying-tool; then, before the bees have time to get back up again, he lifts out the frames, shaking or brushing off the remaining bees, and sets them in the box on the wheelbarrow, then proceeds to fill the other box in the same way. He then wheels them into the honey-house and sets them on to the skeleton stand, seen at 1 in Fig. 1, in exchange for two boxes of empty combs which the man at the extractor has ready for him. He then returns to the yard, exchanges the empty combs that have been extracted for full ones, and so on. When the bee-broom becomes sticky it is placed in the bucket of water in exchange for a clean one.

The man inside stands in the space between stand No. 1. Fig. 1, the large uncapping-box No. 2, and extractor No. 3. These are so set that a man can reach the combs in the hauling-boxes on stand No. 1, set them on the revolving rest on the uncapping-box, and, when uncapped, set them into the extractor by barely moving out of his tracks. He uncaps enough combs to fill the extractor; sets them in it as uncapped, then turns the machine at a good speed for a few rounds until the honey is mostly out, then leaves the machine running to finish cleaning the combs, and goes on uncapping. After uncapping one, two, or three combs, as the case may be, the reel of the extractor has lost most of its speed, and is quickly stopped and the combs reversed; the motion is again accelerated, and held for a moment, then let run of its own accord, while the operator uncaps enough more combs to fill the extractor again. He now empties a bucket of honey, which has run out of the extractor into one of the strainers in strainer-box No. 4 of Fig. 1, or sets an empty can in place of a full one on the weighing-machine at No. 5, Fig. 1.

He next grasps the extractor-crank with the right hand and almost instantly stops the machine, and at the same time raises the left hand, grasping one of the empty combs as soon as he can safely do so, which is very soon after the right hand catches the crank. The left hand turns the revolving frame slightly as it raises the comb, so that the right hand can catch the next comb, bringing the two out almost simultaneously. The operation is repeated where a four or six-frame extractor is used. The empty combs are placed in the hauling-boxes from which the full combs were taken, and are then ready to go out to the hives.

The extractor is immediately filled with uncapped combs which have been set cornerwise into the end of the uncapping-box near-



est the extractor. The machine is again speeded up, and the operation repeated.

The strainer-box, No. 4, Fig. 1, is made of  $\frac{3}{4}$  lumber, 12 in. deep, 18 in. wide, and  $3\frac{1}{2}$  to 6 ft. long, as the case may require. A strip of half-inch stuff is nailed around the top, and allowed to come up an inch above the top of the box. This makes a large rabbet or ledge all around the top of the box for the strainers to rest in. The strainers are made of fine-mesh cheese-cloth which is fastened to rims made of  $\frac{3}{8} \times \frac{1}{2}$ -inch stuff, long enough to set across the box and rest on the rabbets at the sides of the strainer-box, and wide enough so that three to six will just fill the box lengthwise when they are set side by side. The box in the picture, Fig. 1, has three strainers.

The cheese-cloth is fastened so that it bags uniformly, and nearly reaches the bottom of the box. The strainer-box No. 4, Fig. 1, is

will be placed downward, and these few bits of wax will still be prevented from going into the honey.

We generally have a few extra strainers on hand to exchange with or take the place of those that temporarily become unfit for use. When the cheese-cloth becomes worn it can cheaply be replaced with new. The honey runs directly from this box through a large molasses-gate into 60-lb. cans which rest on the automatic can-filler, and, as filled, are placed into cases and nailed up ready for market.

For the last three years I have used a machine made of four small-sized automatic fillers set side by side in a stand of convenient height, and attached to four gates set into the side of one strainer-box. With this arrangement I can fill small packages from jelly-glasses to gallon cans as fast as an operator can set on the empty and take off the full packages. In fact, I have filled pint Mason jars faster than two assistants could put on the rubbers and caps.

View, Utah.

### FOUL BROOD.

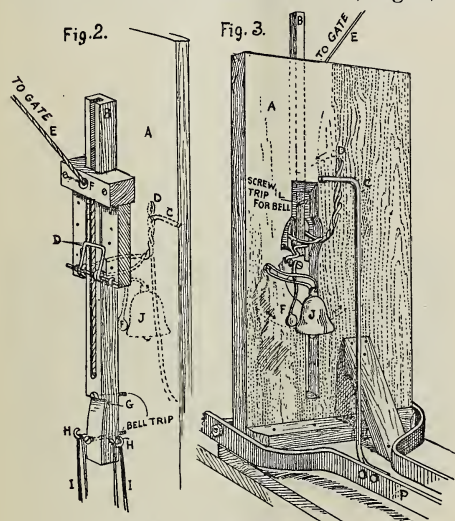
**A Treatment that Will Enable the Up-to-date Bee-keepers to Cope Successfully With the Disease, Without the Loss of Bees or Honey Crop.**

BY W. W. CASE.

The rational treatment of an apiary infected with foul brood, like many other bee problems, depends, to a great extent, on good, sound, common sense, combined with general knowledge of the disease, and is more or less modified by the time of season. On finding bad brood in the apiary in spring or early summer no one should become unduly alarmed, or act too hastily, as it may or may not be foul brood. Examine again in a few days; and if the disease is found to be progressing, and you are sure of its being foul brood, proceed as follows:

Do not give surplus room, but keep the colony crowded as much as possible, thus inducing it to swarm early; and if it will not swarm naturally, compel it to do so by the "shook swarm" route just as soon as it becomes real strong. In either case, after swarming remove the old colony to a new stand and hive the swarm on the old stand in a clean hive on foundation, and leave it entirely alone for one week. Let the old stock, as usual, raise a queen; and on the evening of the 21st day after the swarm issued, the brood being then all hatched and the young queen commencing to lay, shake the bees from the combs on to foundation, after which the old combs can be rendered into wax.

If the apiary is large, and a considerable number of colonies are found to be promiscuously infected throughout the yard, it is better to remove all the infected colonies, after swarming, to one end of the yard, preferably separated from the other colonies by



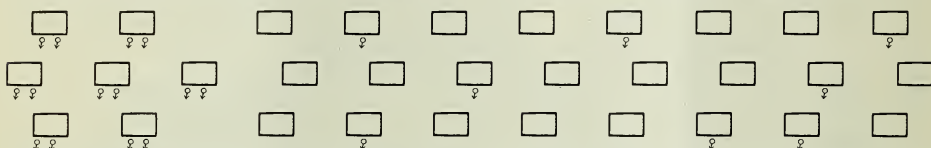
DETAIL OF THE CAN-FILLER.

run with the honey-gate open most of the time. It is put together with water-tight joints, well painted on the outside; and then, as an extra precaution against leaking, is waxed inside. These strainers, themselves, can be cleaned very easily after the honey has mostly drained through. The strainers, one at a time, can be lifted out, the refuse tipped out by turning the strainer inside out with an easy motion of the hands, and, if very sticky, can be scraped to hasten matters. Then it can be set into water to soak, still remaining inside out, leaving the sticky side down. The wooden rim floats on the top, effectually preventing any of the bits of wax, etc., which soak off and fill the water from getting into the strainer and sticking to the clean side when it is raised out of the water.

After soaking a short time the bits can easily be removed by raising the strainer from the water and giving it a few sharp jerks or flips; but if the bits should not all come off they will do no damage, as, in replacing the strainer, the original clean side

at least fifteen feet. In the diagram, infected colonies are marked ♀, and their position after swarming is marked ♀♀. In this manner the disease is constantly removed from the midst of the apiary, and, if desired, the ♀♀ hives may be so placed that two can be readily united when rehived on the 21st day. The ground in front of all treated colonies should be sprinkled thickly with salt, otherwise the infection may be carried right back into the hive on the feet of the bees during wet weather, from dead brood, which is sometimes carried out by the bees in an effort to clean up.

Should the disease develop late in the season—too late to build up before winter—either of two plans can be safely used. If possible, and you *know* that the combs are free from infection (a rather difficult question to answer in an infected apiary), rehive the infected colony; after brood-rearing has



The ♀ represents infected colonies before treatment; ♀♀ represents colonies removed from ♀ after having swarmed, leaving the main lot free of the disease.

ceased for the season, on a sufficient number of well-filled combs to insure safe wintering, extract the other combs and render the wax; otherwise, carefully mark every hive showing infection, and the following spring proceed as above by the swarming route if the disease reappears.

In all cases of treatment where the colonies are hived on full sheets of foundation it must be understood that they be let absolutely alone for at least five days—better one full week—as the comb-builders take all the honey when the others go to the field; and, if not disturbed so as to break the wax curtain, will consume it *all* in the production of comb before young brood can hatch. If disturbed before that time so as to cause them to fill up or exchange honey, on again going to the field they will deposit their honey in the first empty cell they can find, and are thus almost sure to retain infection and make the treatment of no effect. Should it become absolutely necessary to disturb a colony up to the fourth day, remove all comb built up to that time, *a la* McEvoy, otherwise rehiving is *not* necessary.

With the exception of the natural swarms, of course all work should be done late in the day after the bees are done flying, and the usual precautions used against robbing.

If possible, all treatment should take place during a flow of honey. In some instances during flows of certain honeys the disease will voluntarily disappear of itself *and stay cured*; but in all such cases those colonies will bear close watching the next season.

I have had to treat but one colony during the present summer to the extent of removing the combs, and that by the natural-swarm

method. In one other case, quite bad at the time of swarming, the old colony cleaned up the combs thoroughly before the old brood all hatched, and it is now without a sign of disease; and has been hatching clean brood since July 1. There has been practically enough buckwheat honey for breeding purposes coming in during that time.

There being foul brood in all directions at the present time, I feel it hardly worth while to try for its total eradication; yet I allow it in no way to interfere with the production of a honey crop; and to-day a foul-brood inspector would have to have sharp eyes indeed to find a trace of it in my apiary; and to-day, after fighting the disease for more than a dozen years, and seeing it sweep thousands of colonies out of existence, in many cases entire apiaries, I at last feel master of the situation.

This method is clean, does away with the

unhatched-brood nuisance, which is usually buried or burned—an operation always attended by more or less danger of spreading the infection—does not waste the life of a single bee or larva, and deprives the use of a queen for only some three days or less while the treated colony is building comb, and does not interfere with the securing of a season's normal honey crop. It also allows a fully normal increase; tends to keep combs new, while the wax rendered will fully pay for the foundation used, and makes the apiarist master of the situation, reduces the terror of the mere mention of foul brood to a minimum, and certainly is a strong contrast to when I consigned fourteen colonies—bees, hives, and combs complete—to a huge brushheap and cremated the whole rotten mess in a single night.

Of course, this treatment is intended for use *before* the colonies have dwindled to nothing, and is intended to prevent the scourge from getting control of and ruining the apiary. Taken in time the disease is easily handled; neglected, and the result is utter ruin to both bees and owner.

NOTE.—Aug. 1, 11:30 A.M.—A close inspection this morning shows my apiary at date without a single cell of bad brood, and yet it may break out again.

[The treatment here given is much like some others that have been recommended, and they all have the merit that every bit of the good brood is saved. In some respects this one is simpler, in that it dispenses with bee-escapes and perforated zinc; but in another way the sick colony moved to another stand might be so depopulated as to put



up a poor resistance against robbers. This could be taken care of by contracting the entrance of all the weak stocks so moved.

The general scheme of isolating the sick, as shown in the diagram, would, we should say, have the effect of *spreading* the disease among the healthy more than ever. The old bees, after being moved, would go back to the old location, and, not finding their hive, go into some one near by. We have proven time and time again that bees from an affected colony carry the disease in this way very readily. In fact, you admit as much when you move the bees. If you moved the sick ones to a hospital yard three or four miles away the plan would be all right.

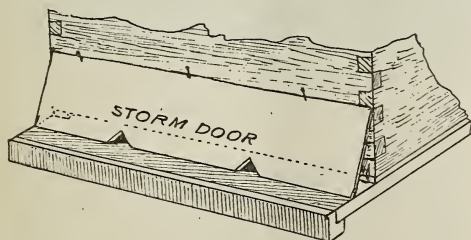
We should never be satisfied with partial eradication, but strive for a complete cleaning-up of the locality. This can be done if all old combs in colonies, whether apparently diseased or not, be melted up and foundation be put in its place.—ED.]

### STORM-DOORS FOR OUTDOOR-WINTERED COLONIES.

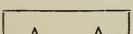
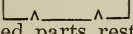
#### How to Keep Bees from Flying Out When it is too Cold.

BY A. J. HALTER.

On page 1559, Dec. 15, you mention a cage for retaining bees in hives for wintering. Your advice may be very good so far as you have experimented along this line in regard to indoor wintering or yards located where cages can be removed and replaced conveniently. However, you make no mention of outyards which are outdoors all the way from three to thirty miles from home. How can your cage be placed to give satisfaction for bees thus located? I believe, Mr. Editor,



outyards are the most important factors in modern bee-keeping among a great many bee-keepers, and are the very bees which most need protection.

On page 1571, same issue, you show a cut of a hive-stand used by Mr. Vernon Burt, which style I also have used for the past four seasons, mine being 12 inches in height, which I consider high enough for our location to be above ordinary snow level. If you will take a thin board about  $\frac{3}{4}$  by 4 wide, the full width of hive, cutting two holes  $\Lambda$  shaped,  nailing it slanting against the  front of the hive so the  $\Lambda$ -shaped parts rest flush on the outer

edge of the stand so there will be a small ridge on front, I believe you will have solved the problem quite satisfactorily as to outdoor wintering, for the following reasons:

1. The sun's rays can not penetrate to the hive entrance proper.

2. When it snows enough, snow will gather on front of the cuts to cover them up, and bees can not fly out unless they crawl through the side opening.

3. The entrance does not clog up with dead bees or ice.

4. When a warm spell comes, the snow must first be melted away in front of the board, and bees will not be lured outside before it is warm enough for them to return.

5. There will be plenty of ventilation, as you can leave full width ( $\frac{3}{4}$  inch) of the bottom-board open, the sides affording enough ventilation during a cold period of snow and ice.

6. By placing a board slanting, about three inches of the bottom-board is clean and dry under said board; and should any bees be wanting to fly out of the hive they must either crawl out on the sides or through the cuts before they can take wing.

It being cold, they generally return to cluster when they come in contact with cold air.

I have tested this plan to my entire satisfaction, especially the past season. At times you can not find 100 bees in a yard of 50 or more colonies on any one day which get lost by flying out while the sun shines during a cold spell.

At present I am experimenting in wintering outdoors, using ground cork as packing, having an outyard of 85 colonies equipped in this manner. If successful I will advise you later.

Akron, O.

[The arrangement here shown, we believe would be excellent. It is along the line of suggestion made by G. M. Doolittle years ago, in which he recommended leaning a board up in front of the hive; but your modification has the advantage in that the bees can pass through the two  $\Lambda$ -shaped cuts made in front of the board. Some such arrangement should be used in many of our bee-yards during the next six weeks. There is no question at all but that many outdoor bees, healthy ones, too, lured out by an inviting sunshine, in a chilly atmosphere, come out only to die.

As we have already explained, the wire-cloth vestibules for the outdoor bees have not come up to our expectations. However, at no time did we intend to use them at out-yards, for the very obvious reason that they could not be removed when it was very necessary for the bees to take a flight when such flight could be undertaken in a warm air. Taking it all in all, we are inclined to recommend your arrangement rather than the wire-cloth vestibule that actually shuts the bees in, giving them a flight only at the will of the owner. The trouble with the cage was that some badly diseased bees are shut in at times when they ought to be out of the

way. Their presence causes the combs to be more or less soiled, transmitting the trouble to other bees. Nature has provided that a diseased bee always seeks to get out of the hive. This is absolutely essential to the well-being of the colony, for such bees will probably never return.

The ground cork referred to is, perhaps, the best packing material that has thus far been suggested; but for most bee-keepers it is too expensive to use. Other and cheaper materials will give practically as good results.—Ed.]

### BEE-TREE HUNTING.

#### Why it Does Not Always Pay; a Plan for Getting Two or Three Colonies from One Colony in a Tree.

BY JOHN R. LOCKARD.

In looking over some back numbers of GLEANINGS I notice a controversy in regard to bee-hunting. One party claims that it does not pay; another, that it does. Now let me say that I believe both writers have reasons for their belief. Bee-hunting for pleasure and profit has been a pastime with me since boyhood, and I am not a young man any more. I have found and cut bee-trees in all months of the year except in the winter, when this is out of the question. The mode followed by old-time bee-hunters, and in my earlier days by myself, was to find the bees, and, if not too late in the season, cut the tree, take what honey there might be, and smoke the bees into an old box hive. If they gathered sufficient stores to tide them over the winter (which was seldom the case), the one so manipulating would think he deserved some praise. But if starvation overtook them it seemed to cause no remorse. More often the tree would be left until late in the fall, then cut, all honey taken, and the bees left to starve or freeze to death. I don't believe any one was ever benefited financially or morally by following the above methods. Nor does any one *deserve* success who has no more sympathy for the bees than to take all stores from them and leave them to freeze and starve. This system of handling bees is on a par with a man who would pen up his domestic animals and take away all means of sustaining life. Morally it is the same. I am still a bee-hunter, but do not practice the methods described. If bees are properly handled, bee-hunting pays big.

I have read Mr. Fisher's article, on how to take bees without cutting the tree, p. 998. The man deserves praise, for very few people have the nerve to climb, say, from twenty to sixty feet in order to better the condition of the bee. There are two things about the method that I do not like. I don't think it safe to climb. I have known of some sad accidents to happen in this way, and I don't like that sulphur that he uses. This is getting back to the primitive way of taking honey from the bees.

It has been my plan for a number of years to find bee-trees during the summer or autumn months, and cut them the following spring. One of the methods practiced was to have a box some two feet in length, eight inches square, wire screen fixed stationary on one end; a lid, the center being of the same material, for the other end. The tree would be cut, the bees run into this forcing-box, the brood taken home in a basket, and the pieces suitable would be placed in frames of an eight-frame hive, the kind I use. The bees would then be shaken in front of the hive, and placed on their permanent stand. I have had fair success by following this plan, yet this method has its drawbacks. Very often the brood would perish in bringing it home, while cutting the tree; and in taking out the brood thousands of bees would take flight and circle around, hunting for their lost home. These bees would be lost, and, while the financial loss might not be great, our conscience tells us that, if possible, we should not let one bee perish.

Later on I tried taking a frame hive, and, after cutting the tree, taking honey and brood out, putting the brood in frames. Then I set the hive on the log, run the bees in, put a stone on top so it would not blow over if a storm should come, then I would leave it there for a week or two and bring it home. This is, perhaps, a better plan than the former. But this plan has its drawbacks also.

I don't need to tell the bee-hunter that, to carry a hive and other necessary articles through pathless woods, is a hard job. Then we must make another trip after the hive that we left. We must have a helper; and if the ground is uneven and rocky, as is often the case, we shall do well if some of the combs are not loose by the time we get home.

We get all the bees by this method; but if we pay fair wages for the help necessary in most cases it cuts the profits away down. There is nothing new in the above methods, nor do I claim that the following plan is new; but, taking all things into consideration, I find it the most satisfactory, and I expect to follow the plan until something better bobs up.

The present year I had five bee-trees standing, found the year before. On account of other work I have cut but two of them. The others will have to wait until next spring. May 31st I cut one, and for bees, honey, and brood it was one of the best I ever saw. The side of the log was split off, and the brood-combs and honey taken out; the forcing-box was placed over the main body of bees, and in a short time the box was nearly full of bees, but they seemed to be inclined to run out on looking over some of the brood that was lying on the log. I saw the queen crawling around. In a moment she was in the box, and the bees seemed contented. (I wish to remark that she was the smallest queen I ever saw; but from the amount of bees and brood in the tree I supposed she was worth taking. Since bringing her home she has kept up her good record.)



After the box was closed up, the brood was placed back in the tree; a long strip of brood, then two or three sticks up and down, then another piece of brood, and so on until it was all back in the tree, the small sticks forming a bee-space between each comb. Don't lose sight of this: The side, not the top of the log, should be cut out. After this the pieces of log are to be split off; large flat stones, any thing that would shield them from the storms, were placed over them, forming a kind of shed roof. Next I pick up my box; but before starting for home I see hundreds—yes, thousands—of bees, tired of wandering in the air, settling down on the brood. Thus I bid them adieu.

On reaching home a hive full of combs left over from the previous year is placed on the ground, the bees shaken in front of it, and placed on their stand. The first of August I took a super of honey from this colony. Some two weeks after this I again took my forcing-box and paid them another visit. They were working strong. It did not take long to take the cover off, drive the bees into the box, and, as some bees were in the air, I repeated the performance of laying the combs back in the tree.

Bees in fair condition sell readily in the spring for \$5.00. I sold some this spring at that price, and could have sold more. Nineteenths of the bees found here are in trees that are worthless for lumber, and there is never any thing said about the cutting; but if the tree is valuable, or belongs to our neighbors, we should buy the tree or let it stand.

I think if the above plans are followed you will agree with me that bee-hunting pays.

Enid, Pa.

## ARTIFICIAL CLUSTERING - PLACES FOR SWARMS.

BY N. L. ANDERSON.

The accompanying engraving shows my out-apiary on five acres of ground that I bought  $1\frac{1}{4}$  miles from Spearfish. The little house you see is for bee-supplies and for honey when it is first taken off; and then I haul it to town to my home, where I get it ready for the market. I use outer cases made to slip over the hive to protect the bees from the cold in winter, and from the sun in summer.



OUT-APIARY OF N. L. ANDERSON; THE FOUR BOARDS STANDING TOGETHER MAKE A CLUSTERING-PLACE FOR SWARMS.

This lot of bees, which was very nearly as large as the first, was treated the same, with the exception that an entrance-guard was placed on the hive so I could be certain whether they had a queen or not. It was not long after pouring them out before I saw a nice queen trying to get through the guard. This colony is strong to-day.

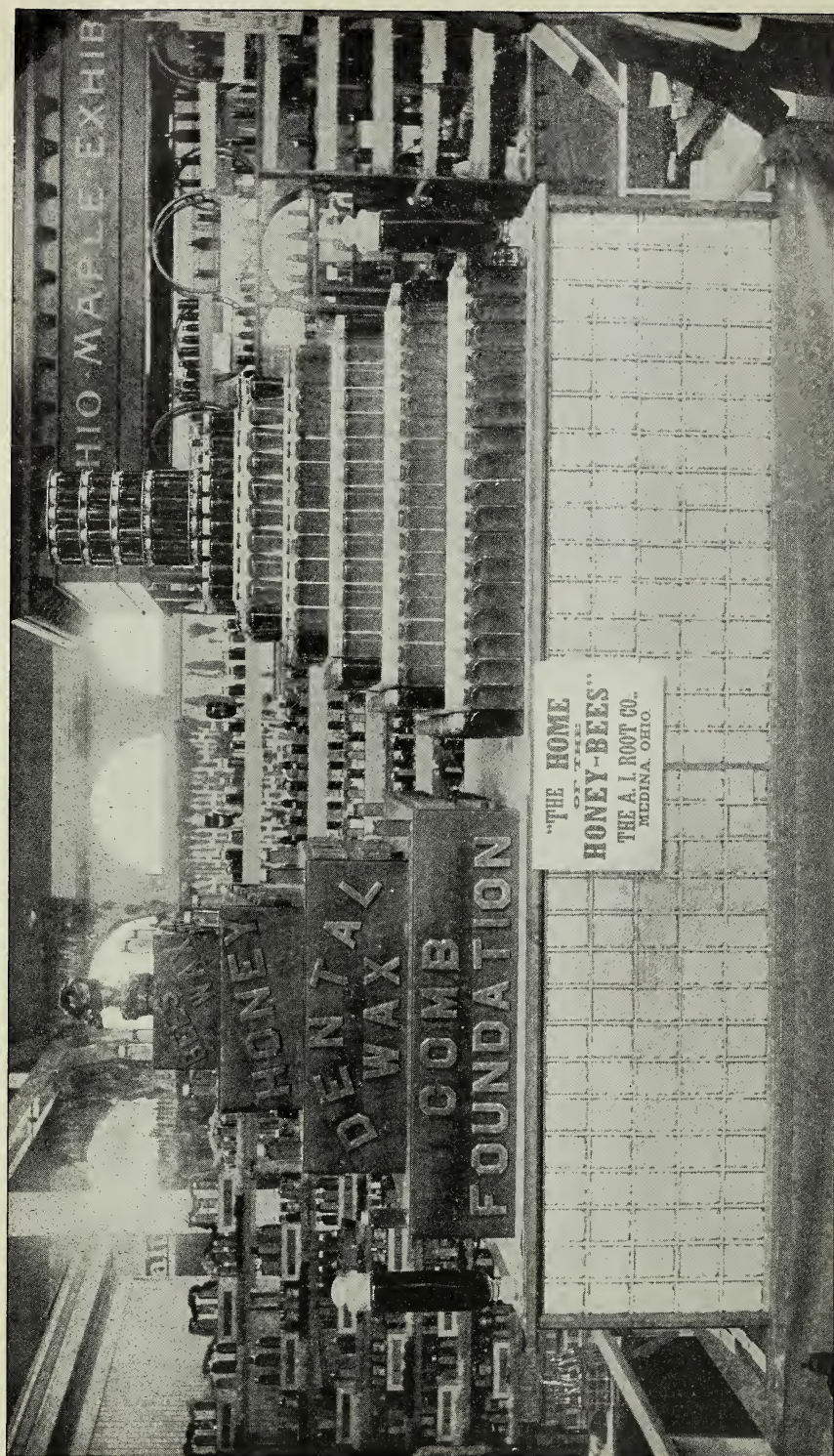
A few days ago, while passing along a road not far from the tree, I thought I would walk to the tree, and, if any bees were still there, bring them home later and join them to the others. It was a surprise to me to find them working away, and the second queen must have been mated and laying, for there was every indication that they had a queen. It is possible that I can bring these home, take brood and stores from others that can spare it, and thus get three colonies from one tree.

Those four boards that are standing up together are swarm-catchers. When bees swarm they will alight inside of one of those arrangements, because the boards are slanting. In the background is a mountain named Crow Peak.

Spearfish, S. Dakota.

[We have heard of artificial trees for catching swarms, but never any thing just like the arrangement shown. Some bee-keepers cut large bushy branches from trees and nail them to long poles, which are then stuck in the ground. If no trees are near the apiary the swarms will almost always alight on one of the bushy poles. If the boards arranged as shown would work just as well, they would probably be more convenient than the branches. Of course, when plenty of low trees are near, no such device is necessary.—ED.]





A BEE AND HONEY EXHIBIT THAT ATTRACTED MUCH ATTENTION AT THE COLUMBUS STATE FAIR IN SEPTEMBER, 1906.



## THE EXHIBITION OF BEES AND HONEY AT STATE FAIRS.

BY E. R. ROOT.

The subjoined illustrations show the display that we made at the Ohio State fair at Columbus, in September last. This attracted a great deal of attention through the State; and as other exhibits of a like nature are now being made at poultry shows, some hints and suggestions along these lines may prove to be helpful.

The bee and honey display was designed and prepared by our honey-man, Mr. Jesse Warren, who has made this matter a special study for a year or so back. So well did he succeed with his show at our Ohio State fair that Mr. Tusing, of the State Board of Agriculture, expressed himself as being highly pleased, and desired to have it reproduced in the Ohio exhibit at the Jamestown exposition at Norfolk this coming summer. Twice, and perhaps three times, the Board has approached us on this subject. We have not definitely promised, but the incident is here mentioned to show the interest that our exhibit created; for Mr. Tusing, of the State Board of Agriculture, said he had heard very favorable comments from every one.

The large half-tone plate shows an elevated table, the panels of which are filled in with No. 1 and fancy sections of comb honey. On top of this table is seen a pyramid on which is placed a variety of packages of honey put up in glass. Just opposite is another pyramid, made of beeswax. Surmounting the whole is the bust of a goddess also of beeswax. But we shall have occasion to refer to this a little later.

Surrounding this general exhibit was a display of live bees in observatory hives, of bee-appliances, queen-rearing outfits, straw hives, and any thing and every thing connected with the bee industry in general. Two or three attendants were kept busy in explaining the use of the various articles and denying the oft-repeated comb-honey lie and distributing our \$1000 reward-cards. The two interior views here taken were secured just after the crowds had rushed out of the building to see Knabenshue and his air-ship. One of the boys then snapped the camera and the results are here shown.

But how about that pyramid of beeswax? The separate steps were not made of solid blocks of wax, for they were nothing more nor less than a series of boxes of proportionate sizes piled one on top of another. These were then covered with long sheets of nice



A SUGGESTION FOR A BEESWAX EXHIBIT AT STATE FAIRS.





THE APIARIAN EXHIBIT AT THE COLUMBUS STATE FAIR IN SEPTEMBER, 1906.

yellow wax from the Weed sheeter. Wooden letters were then dipped in melted wax and secured to the several steps of the pyramid by means of nails. "But," you ask, "how did you make the goddess?" We obtained a plaster cast, for a nominal sum, and then gave her two or three plunges into some

melted wax. When she came out of her bath she looked as if she were made of a solid chunk of beeswax. A separate view of the pyramid here shown will give one a little idea of the detail of the construction.

The remaining view is a snapshot of our outdoor exhibit and honey-sales stand. These



THE DEMONSTRATION WORK AT THE COLUMBUS STATE FAIR.



were entirely separate and distinct from that inside. At the former we were permitted to sell honey, honey-cakes, and the like. To draw crowds we put one of our men inside the cage with a colony of bees. The various stunts that he performed have been given before in these columns, and we will not repeat them now. But it is sufficient to state that it was a drawing card and a great success.

The view here shown is a fair average of the crowds that assembled around the cage, not of the big jams that at times were seen there.

Perhaps it would be well to explain that dental wax is now coming to be quite a commodity. It was for that reason that the article is mentioned on one of the blocks of the pyramid.

## EUCALYPTUS.

BY W. K. MORRISON.

The eucalyptus family are famous honey-yielders in their native home, Australia, New Zealand, and Tasmania, and, to a certain extent, in California, where thirty or forty species have been introduced out of a total of nearly two hundred recognized species. The eucalypts are all either tropical or sub-tropical in their habitat, and to a great degree are drouth-resisters. Perhaps no tree is better entitled to be largely planted for its lumber, which is equal to the best mahogany, redwood, oak, or rosewood, in appearance, and excelled by none in tensile strength and durability; but it has a great advantage over all rivals in that it grows with wonderful rapidity, and this, too, where other trees fail for lack of water. The rate of growth in California of the blue gum of Tasmania, over a term of years, has been determined to be 19 inches per month. The blue gum grows to a great height, and is an excellent honey-bearer. It is known to botanists as *Eucalyptus globulus*. It has been extensively planted in California, Algeria, and South Europe. The Australian bee-keepers are unanimous in stating the red gum (*E. rostrata*) to be the best honey-producer, and, luckily, it is considered to be probably the best of all the eucalypts for timber purposes. It grows in the flats near the Australian rivers, and probably can not stand quite as much cold as the blue gum. It grows to be an immense tree (420 feet) and eucalyptus-trees have been noted in Queensland 500 feet in height. *Eucalyptus melidora* is also a good bee-keeper's tree. It is hardier than some others, as it grows at high elevations in Australia. It would probably do well on the Gulf Coast and in Southwest Texas, and it is quite possible it will grow where the palmetto grows on the coast of South Carolina, Georgia, and Florida. Florida, South Texas, Arizona, and California are the States most likely to benefit by the introduction of the eucalypts. To an American the leaves of the gum-tree appear to be scanty; but there are species, not so well

known as yet, which have a fine umbrageous foliage of large leaves.

The seeds of eucalyptus are extremely small—almost incredibly so. Here are specimens:

Blue gums, one ounce sifted fertile seed, 10, 112.

Stringy bark, unsifted, one ounce, 21,080.

Swamp gum-tree " " " 23,264.

Peppermint gum " " " 17,600.

The seeds are easily grown, and in six weeks are ready for transplanting.

The most popular plan of planting seems to be to plant them 6 feet by 6 feet till they are five years old, when they are thinned out to 200 trees per acre. This is estimated to give a net return of \$100 per acre, or \$20 per acre per annum. At five years the trees are of a considerable size. Mr. Elwood Cooper, of Santa Barbara, Cal., records one tree at three years of age to be 9½ inches in diameter and 42 feet high, and another 45½ feet in height, or over 14 inches per month. This is a great rate of growth for a *hard-wood* tree. In mere size the redwood-trees of California excel the gum-trees; but the former are slow growers. *Eucalyptus globulus* approaches the redwood closely, as it has been recorded in Tasmania 80 feet in diameter and 300 feet high. Eucalyptus-trees are so readily grown where the climate is suitable that it is probable a business can be done in selling young trees to neighbors. Perhaps this is the best way for a bee-keeper to do who wishes to improve the honey-bearing flora of his locality. The seeds are not hard to get, and, being so small, can be sent by mail long distances.

The Australians have another family of trees nearly as valuable as the eucalypts, and perhaps better as bee-nectar producers. These are the wattle barks of the colonists, and the acacias of botanists. The principal variety is *Acacia decurrens*, or black wattle. It is in great demand for dyeing and tanning purposes, and great forests of it have been destroyed. It blooms at a different season from the eucalyptus family.

Another Australian honey-yielder and rapid grower is the *Grevillea robusta*, or silk oak, also an excellent tree. It may be well to state that none of these trees will grow in the North. If they did it would be a great thing for the bee-keeper's industry.

It is rather difficult to get literature on these trees in this country. Only one book has appeared on the family in this country, if I am not mistaken, and this is by the United States Department of Agriculture. Baron Mueller, of Victoria, is the great authority on the genus, and where possible he mentions the honey-bearing value of the different species. It would probably be easier to send to Melbourne, Aus., for his books, though some are out of print and hard to find.

The forestry division of the United States Department of Agriculture, Washington, D. C., sells the book on the eucalyptus for \$1.00, which will probably answer all requirements. It may be secured direct from the Supt. of Public Documents, Washington.

## SOME YORK-STATE BEE-KEEPERS.

Hubert Hetherington, of Cherry Valley, N. Y.; a Worthy Son of a Worthy Sire.

BY D. EVERETT LYON,

*Special Field Correspondent of Gleanings.*

[Perhaps the reader will better understand the hive here illustrated if we say that it has a bottom-board having a square hole through the center of it. The bees, in going into the hive, pass *under* the bottom, up an incline, into the center of the brood-chamber. This latter consists of a series of closed-end frames, Quinby depth, that hook on to the bottom and stand up against each other in exact alignment, with a wood panel on each outside frame. The whole are secured in place by means of a looped string. It is surprising how quickly this can be put on and removed.

Over this brood-nest is a honey-board; and then surrounding the whole is a cap deep enough to reach

this inner wall is necessarily exposed to the elements. The writer saw this whole arrangement in operation at Mr. Elwood's seventeen years ago next summer, and was surprised to observe how readily it could be operated. In the finding of queens, and the contracting of the brood-nest to any size, for example, the general arrangement is unique.

The old original closed-end Quinby hive was rather difficult to handle; but Capt. Hetherington so improved it that no loose hanging frame of the Langstroth type could be handled any more readily or easily, with the further advantage that the closed-end frames make a warmer brood-nest. The illustration, taken from Cheshire, will show up the detail of the new Quinby hive.—ED.]

Perhaps no name is better known among, and no other man has done so much for, the bee-keepers of New York than the late Capt. Hetherington, of Cherry Valley, N. Y. For a period of over twenty years he was by far



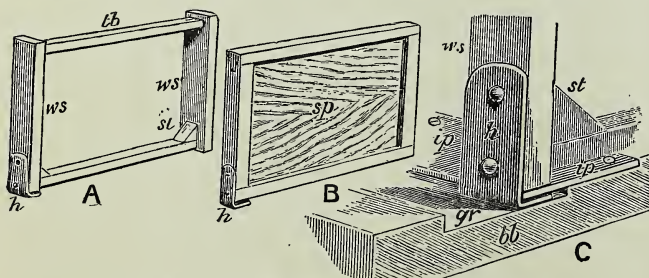
FIG. 1.—HUBERT HETHERINGTON BEARS A STRIKING RESEMBLANCE TO HIS FATHER, CAPTAIN HETHERINGTON.

clear over the frames and down to the bottom-board which projects around on all four sides. In the height of the honey-flow this cap is raised up to take in one or more supers, as shown in the several illustrations. During winter the supers are, of course, removed when the cap is fastened to the bottom-board, making what

the most extensive bee-keeper in this or any other country, his yards comprising some 3000 colonies scattered in various places both north and south.

Though more or less interested in bees before the civil war, it was not until the close of that great struggle, in which he played a conspicuous and honorable part, that he became a bee-keeper on a large scale.

The Virginia apiaries were largely the result of that war, for it was while campaigning through that State the captain noted the great variety and abundance of honey-producing plants—notably the blue thistle; and it was the remembrance of it that led him in later years to plant a number of apiaries in the Shenandoah Valley.



HOW THE QUINBY FRAME HOOKS ON TO THE BOTTOM.

is, to all intents and purposes, a dead-air space. The closed ends of the Hetherington-Quinby frame, the two side panels, and the honey-board, make up the inner walls of the brood-nest, and the before-described cap, the outer walls. During the height of the season





FIG. 2.—HUBERT HETHERINGTON AT WORK AMONG HIS BEES.

What Captain Hetherington has done for the bee-keeping world, both in his inventions and in things the fallacy of which he proved by costly experiments, can never be estimated.

Captain Hetherington was a man always interested in the welfare of his fellow bee-keepers, and a number of years ago it was my privilege to ride in the same seat with him from Washington to New York, and to be completely captivated by his descriptions of the bees.

His death, Dec. 31, 1905, removed from us a bee-keeper of whom E. W. Alexander, of Delanson, N. Y., said to the writer last summer, "As a bee-keeper, Captain Hetherington was the prince of bee-keepers."

It will be of great interest to the readers of GLEANINGS to know that Hubert Hetherington, son of the late captain, is, like his esteemed father, every inch a bee-keeper. It was to visit and write up his work that the writer went to Cherry Valley last August, and of that visit none but the most pleasant memories exist.

Hubert Hetherington bears a striking resemblance to his father, and stands over six feet tall in his stocking feet. When I called at the Hetherington homestead, where the son at present resides, I found Mr. Hubert Hetherington very much tired out after a hard day's work in one of the out-apiaries. He operates with help some 1100 colonies in 9 different yards, all run for comb honey, the furthest being 12 miles away.

The outlook for the crop was about 50,000 sections. Hubert sticks to the hive of his father, the Hetherington-Quinby, with its closed-end frames, feeling that for his methods this combination suits him best.

The bees are a cross of two races—Carniolan and Italian; and the day I was among them they proved to be quite cross. They

are hustlers, however, and the dash of Carniolan blood in them results in sections that are finished in snowy whiteness.

Hubert Hetherington is the soul of modesty, and doesn't blow his own horn; but when I parted with him at the railroad depot it was with sincere regret, feeling that here was a worthy son of a worthy sire.



FIG. 3.—REMOVING THE OUTER CASE.



## SWEET CLOVER AS A FORAGE PLANT.

The Experience of a Farmer who Grows it for his Stock; His Cattle will Take it in Preference to Other Clovers.

BY W. T. DAVISON.

It is a common thing to hear people say that nothing will eat sweet clover. Such people are either drawing on their imagination or their experience is limited. Now, I do not say that stock will eat sweet clover when there is plenty of grass, but my calves did that very thing this summer, and kept it eaten down all fall. To try sweet clover further as a forage-plant I turned my calves into a ten-acre field of sweet clover with two acres of English clover on one side of the field. I fully believe they liked the sweet clover as well as the English.

There is no use for any one to say that nothing will eat sweet clover, for I have seen my calves eating it; and when I turned them into that ten-acre field they quit coming up for their feed. It is now Nov. 19. My sweet clover is still green, and we have had freezing weather here. The ground had been frozen hard.

There are three times in a year when sweet clover is a good forage-plant—early spring, before grass comes on; midsummer after grass dries up, and late fall. I am not sowing sweet clover alone for bees, but am



FIG. 4.—TAKING THE QUILT OFF THE SECTIONS.

See the two preceding pages.

sowing for both bees and stock; and I can say from experience that they both do well on it. After this I expect to sow my thinnest land to sweet clover, as I believe it to be a great land-builder.

There is one thing more that I wish to mention about sweet clover. I fully believe that the bark on second-year's sweet clover will make the best of ropes.

Velpen, Ind., Nov. 19.

[The following, which tells how sweet clover behaves in Montour Co., Pa., from the *American Agriculturist*, is along the same line:]

I have been reading several articles in *American Agriculturist* on the value of sweet clover, *Melilotus alba*. Some writers say it is not eaten by stock. Others say it makes good hay when cut and stored in layers between layers of other hay. We have it growing in every by-place along the roadside, on stone piles and in cultivated fields. It will grow where no other plant can live. On poor barren land it grows 3 to 6 feet high.

I selected one stalk having 13 branches measuring 4 to 8 feet long, grown from a single seed. The root of this stalk was 3 feet 4 inches long with large nodules. It starts to grow in the spring earlier than any of the other forage plants. By April 10 to 15 it is from 4 to 8 inches high, and eaten with relish by cattle and colts. Our cattle eat it all summer; but when allowed to grow it soon becomes woody. The cattle then eat



FIG. 5.—MANIPULATION OF THE HETHERINGTON STANDING CLOSED-END FRAMES.



only the blossom ends of the branches. It is not easily cured for hay. It is very sappy; and, before it cures, the leaves all drop off, leaving only the stem.

I have a piece of sweet corn and pumpkins growing now in an old peach-orchard. The ground was very poor, and for three years it has been covered with sweet clover. I removed the old stalks that grew the preceding year, and plowed it May 16. The clover was then 15 inches high, and three horses could scarcely turn it. It lay until June 21, when I marked and planted it. The sod rotted completely, and the corn proved the best I ever grew. M. S. BOND.

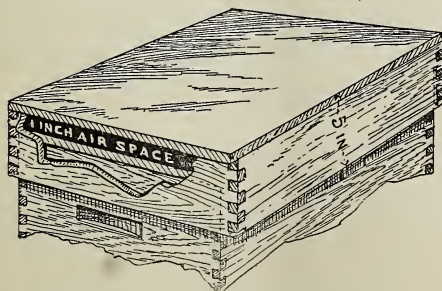
### PROTECTION FOR SUPERS.

#### A Double Dead-air Spaced Cover; How to Get More Wax from a Swiss Extractor; Moving Bees in Hives with Open Entrances.

BY GEORGE SHIBER.

I have read with interest the discussion in regard to warm supers in raising section honey. From experiences I have had along this line I am inclined to the opinion that warm supers are the thing. A few years ago I made some covers like the cut. It was made, as you will see, to telescope over the top of an eight-frame hive or super, telescoping over the top of the hive and projecting down the sides and all around about five inches. It was covered over with cheese-cloth, and then painted several coats of white lead. A warm cover, or protection of this kind for super, would, of course, be more noticeable during a poor season. Such a season we had here this past summer. The few hives on which I used this cover were a surprise over those with single-board covers. At first I thought the queens were out of the ordinary; but I gave this theory up, as I had a number of queens just as well reared in other hives, and of the same blood; so I am satisfied that it was the warmer supers, caused by the better protection provided by the covers.

Now, the question comes up, "Would it not be better to have this dead-air-space filled with chaff or sawdust, making the same  $1\frac{1}{2}$  inches, or perhaps 2 inches deep?" I con-



SHIBER'S DEAD-AIR-SPACED COVER.

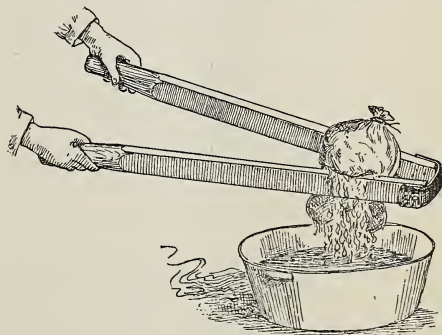
sider, however, that the projecting rim of 5 inches below the hive is of prime importance. Mainly, of course, the most protection should be on the top of the hive.

Mr. Pettit, of Canada, has long been an advocate of a chaff cushion over the super of

sections; and when the sections are taken off, the cushion goes on top of the frames—in short, as I understand him, the cushion is left at the top of the hive the year round, and that is where most of the heat radiates from a colony of bees—by way of the cover, if it is of one thickness of board. I wonder who and how many are using chaff cushions over the super, or other protection. It seems we might all profit by hearing of the different plans.

#### A SIMPLE WAX-PRESS.

There is a little kink I practice in rendering old and black combs. I used the Swiss extractor; and after all the wax had run out possible from the extractor the refuse was dumped, steaming hot, into a burlap sack, the sack being tied up close to the slumgum.



The bag was then held by one person, and another applied the pressure. While under pressure, just about as much wax was squeezed out as came from the extractor, and the pressure was obtained very cheaply. Two sticks were nailed together at one end by a leather hinge, the other ends used as handles, when a mighty pressure could be brought to bear on the hot refuse. The one who held the sack kept twisting, and the squeezer kept squeezing, so to speak.

#### MOVING BEES IN HIVES WITH OPEN ENTRANCES.

I note what is said editorially in Sept. 1st GLEANINGS about moving bees with the entrance open. Last spring I bought four colonies of hybrids in big barn-like chaff hives, and they filled the wagon-box. The bees were very cross, so I subdued them with a large quantity of smoke. You would think that they would not offer an attack, but they did—the most savage kind of assault. One hive sprang open a crack large enough for bees to get out. Probably 25 got into the air before I plugged the hole up. The majority of bees, though, I think, could be hauled with open entrances, but not all. In moving bees, have a can of soft mud (very soft), and if a crack or other opening is seen, a handful is thrown in, and it is sealed up tight and very quickly. If you have never tried mud for this purpose, try it and you will be pleased. Have it fairly thin, about like common mortar.

Randolph, N. Y.

[Your method of rendering wax is an old one; and while it is infinitely better than no press at all, it will lose quite a percentage of wax which will necessarily be left in the slumgum, because the outfit is too light to give pressure sufficient to remove the wax still left in the residue. The leather hinge on the end is too weak. A strong iron hinge with wide boards would give better results. The device might extract *all* the wax, providing one would take time enough to heat alternately the slumgum and then squeeze it. The operation would have to be repeated a good many times before all the wax would be removed.]

Your warm cover with dead-air space is along the lines of the best modern practice. Our readers will remember, perhaps, that we have been advising making our comb-honey supers warmer by putting on an extra cap. Mr. R. F. Holtermann, of Brantford, Ont., makes a sort of double cover, something along the line here shown; but he uses in addition a felt covering for greater protection. Mr. Grant Stanley, in the article which follows, has discovered that it is quite an advantage to give the supers extra protection. See what he has to say.—ED.]

#### RUBBER BANDS FOR HOLDING TRANSFERRED COMBS; SUPER-COVERS.

Mention was made at the Jenkintown meeting that rubber bands for holding combs in position in transferring were not as good as splints, for the reason the bees hollow out the comb under the bands. In transferring with the rubber bands, or with any other fastening, for that matter, the colonies should be examined in two or three days after being transferred; and if the bees have fastened the combs to the frames the bands should be removed. If properly used, rubber bands are far ahead of any thing else.

In removing a super of filled sections recently, I left the bee-escape board on top of the next super under the cover. This super remaining on the hive was just nicely started by the bees, and I did not look at the colony again for about a week, when, to my surprise, I found these sections all filled and sealed ready to come off. Such a nice super of clean sections filled out right on top of the hive as they were gave me no small thought. Now, with still more experimenting on this line I am of the opinion that more honey, and of neater appearance, can be secured by the use of super-covers on top of supers under the roof. This board rests flat on the super with just a bee-space between the board and the sections. The bees will not build comb in this space, nor will they daub the tops of the sections with glue, which they surely will when a cloth cover or mat of any kind is used. Another thing, the bees will seal this board down tight to the super on all sides, keeping out light and currents of air. This makes the super warmer than it otherwise would be.

Nisbet, Penn.

GRANT STANLEY.

### THE PURE-FOOD LAW.

#### A Honey-buyer's Opinion Concerning Its Effect on Prices.

BY FRED W. MUTH.

Complying with your request relative to the new pure-food law, asking our opinion as to its effect upon the price of honey, future prospects, etc., we wish to say, in the first place, the new law will compel those to display honesty who have not done so heretofore. On the other hand, our opinion and prediction differ widely from the sentiment generally voiced regarding the advance in prices. We deem it foolish even to think that prices will steadily advance on account of the pure-food law. We are aware that prices have advanced some in the past several months; but this is in sympathy with the prosperity that prevailed in the past year in all lines of business.

You will agree with us that these *are* prosperous times when you take into consideration the present fearfully congested condition of the transportation companies for the past year. They find themselves almost helpless on account of not having sufficient rolling stock nor power to move their freight.

It is this prosperity that has instigated an increase in the consumption of honey, and consequently higher prices. Just as soon as conditions have become settled, and business has fallen into its regular channel, the honey market will find itself in its usual place.

Furthermore, in our opinion, it is wrong to inflate the mind of the bee-keeper (which will be the result of the publications in the bee journals) so that he will expect to obtain exorbitant prices for his product in the future.

Within the past few weeks several of our good customers have concluded to discontinue the use of honey on account of the advanced prices that we were compelled to ask. Naturally, there will be more honey than is needed for those who have heretofore used little or none, and it stands to reason there will be an accumulation, or "choke-up," and down goes the price; for, strictly speaking, honey is not a necessity, which fact has been proven by our customers, who have discontinued its use on account of the high price.

Cincinnati, O.

#### ANOTHER BUYER'S VIEW.

It is somewhat premature to give any opinion as to the workings of the new law, with reference to the sale of extracted honey; but in our opinion it will curtail the consumption of adulterated honey; and while, perhaps, the first few months the public may not use much honey on account of the higher price of the pure article, it eventually will come to it, especially after it has ascertained the difference between adulterated honey and the pure article. In our opinion, the new law will be a benefit to the honey trade.

Chicago, Ill.

S. T. FISH & Co.

[See editorials elsewhere.—ED.]



## EATING HONEY.

**180 Pounds of Honey Consumed by One Man in 180 Days; Canning Fruit, Using Honey Instead of Sugar; a Suggestion for Those who have Indigestion; an Interesting and Valuable Article.**

BY C. W. DAYTON.

To read of families of five or six persons using a five-gallon can of honey a month, or such a matter, is causing some smiles in this quarter of the globe. I have worked for several bee-men, and none of them "made free" with honey on the dining-table. Families who eat much meat do not care much for honey, or, for that matter, any kind of sweets. I have always been a great meat-eater; but several years ago I began to have an almost constant headache, backache, neuralgia, rheumatism, paralysis, etc. These diseases affected me by turns, lasting from a week to months. I began to study health, and soon left off meat and sweets and fermentation foods. This did some good, but there was nothing of very decided benefit until I went down to one meal a day. From a life of almost constant misery I began to feel "like a boy," with no pains or ill feeling, and could work all day and not be tired at the end of the day. But it required an awful effort to master the artificial appetite which had been gaining a foothold in my system for many years, and I could then realize the kind of a "fight" the liquor-drinker must "put up." I had had a headache from twice to three times a week for years and consulted fifteen of the best physicians I could hear of, but only temporary relief came. But my headaches went and have not returned from that day to the present. My folks looked for me to lose flesh and become weak; but I gained 16 pounds the first month, and I was handling the pick and shovel and a ten-pound sledgehammer, and a constant gain in muscular development resulted.

Well, after I got my system and digestion corrected I found that I could return to my old diet of foods, but I had to control my appetite to the needs of my system.

On August 31 I brought into the house and set down by the dining-table a five-gallon can of black-sage honey having the top cut out. I set it on another five-gallon can so that the top came just even with the level of the table so as to be handy to dip my spoon into it, just about four inches from my elbow. When I got GLEANINGS from the postoffice, Sept. 23, and sat down to read, and came across the picture and Mr. Gilstrap's letter on page 1186, I simply reached for the ruler and measured my honey-can, and it has been lowered  $8\frac{1}{2}$  inches in the 24 days—36 to 40 lbs. No one has been here to eat besides my individual self, and the marks on the can show where the honey was when I began. Besides, I have been eating more or less by chunks when working about the honey-house.

The first five months of this year I ate exactly three five-gallon cans. But I ate also a quantity of canned fruit—blackberries, strawberries, plums, apricots, figs, grapes, peaches, pears, apples, etc.—perhaps four or five dozen jars. All of these were canned with honey. We always put up from 100 to 200 Mason jars of fruit every year. Fruits possess tart, which honey lacks. I bought 50 cents' worth of sugar in 1898 and nearly half of it is in the honey-house yet. It was carried there to be put in bee feed, but it has been neglected. I never knew a jar of fruit to spoil with honey. But any canned fruit will spoil if not properly attended to. My neighbors often spoil a half, and that in using sugar. Sugar is somewhat safer than honey. But I found that sugar would make my back ache (kidney trouble) in four or five days, but honey took two weeks. I tested both many times. One spoonful of vinegar took me seven months to cure the effects of. I almost despaired. Sugar was nearly as bad. When we find the remedy it requires time to make reparation of the injured organs which bad diet and habits cause. Nature does the repairing or rebuilding, but not instantly. Now, since I have allowed my digestive organs to repair themselves I can see that even vinegar with such foods as cabbage and meat is necessary. It aids digestion if not used to excess; dissolves uric acid; prevents crystallization of uric acid, I suppose.

Now I come to the canning of fruit with honey. I can not remember when we lost a can. First the can must be hot before the fruit is put in. Then the fruit must be thoroughly heated through before it is put into the cans. These particular points must not be slighted, but they often are. Better boil the fruit more than necessary rather than too little. Boiling extracts the color from the fruit more or less, but that is only "looks." Put the honey in at the last, and fairly heat it through. Suit the taste as to the amount of honey to use. Put the caps on the jars while the fruit is hot. Have the caps hot, right out of hot water. Screw them on with a cloth to prevent the hand from being burned, then the air within the cap will be hot. Set the jars aside to cool, caps down, on the table. Examine them every hour as they cool, and turn the caps on tighter. As the fruit gets cooled it occupies less and less space within. It must draw air in in order to fill the vacancy which would occur. This must be prevented. If no air can get in, the cap will be drawn into a concave shape on the outside. This may indicate the perfectness of the work; but not always, because the caps may have been concave before being put on. Watch this so as not to be misled by it. By the following morning the fruit will be cold, the jars standing on their caps. Examine for small air-bubbles passing upward next to the glass. If there is, it gets in between the cap and rubber and will spoil the fruit. Do not wait until the day gets warm, nor take the jars to a warm room to make this examination. Do it in the coolest part of the morning. That is when the con-

tenets would be the most contracted, and would be drawing the hardest to bring air in. When the fruit warms up a little the draw would be in the other direction—from inside outward. It is impossible to can fruit and not leave a small space to be filled with air. But air is no injury if it is hot. If the cans are set right end up, the air-space would be situated at the top of the jar next to the cap where the air would be admitted. If the caps leaked air, the air which came in would join with the air already in the jar, at once, and there would be no chance to observe its entrance or progress. But with the jar standing upside down, the admitted air will traverse the whole length of the jar before becoming settled at the uppermost portion. If you see small air-bubbles following one another upward, just get the "old man's" beeswax and rosin-dish and brush which he uses to fasten foundation in brood-frames ( $\frac{3}{4}$  beeswax and  $\frac{1}{4}$  rosin melted together), and put a good coating all around over the rubber, covering the edge of the cap. After this, keep the jars standing upside down for a week or more. Watch for bubbles on cool mornings; and when the day warms up, look the jars over to find juice sizzling out from under the edge of the caps. They can not drive air out, because the fruit is next to the cap, but fruit juice will be forced out instead. Put on more wax. Finally the fruit juice will become thickened also, and thus all openings will be closed.

It is preferable to keep jars of fruit in an even temperature.

Do not say you followed the above directions and fruit spoiled. Under my table, against the mop-board, is a row of Mason jars of tomatoes and beans that have been there two years, and they are in perfect condition, and tomatoes are the most difficult of all things to can.

Chatsworth, Cal.

[We shall have to award the palm to our correspondent as a honey-eater; and the fact that the quantity consumed had no unpleasant results speaks eloquently of honey as a food, especially when we take into consideration the fact that Mr. Dayton had previously been suffering from indigestion before he went on to his simple diet of fruit and honey.

In this connection perhaps the editor had better let out a little secret. For many months back he has been living on two meals a day—a substantial breakfast in the morning, a little fruit or nothing at all at mid-day, and a dinner in the evening. Food tastes better, and he never enjoyed better health. But when traveling we eat three meals a day so as to be "like other folks;" but on returning home we skip the mid-day meal.

The suggestions in regard to putting up canned fruits in honey are excellent, and we would suggest that our bee-keeping friends lay this article aside and put it into application during the canning season next summer and fall.—Ed.]

## LIQUEFYING HONEY IN 60-LB. CANS.

### Two Useful Devices for Making the Work Easier; a Little Good Advice.

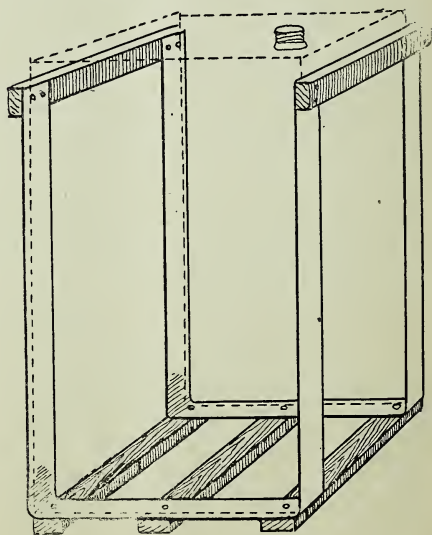
BY E. F. ATWATER.

Many have been the complaints of the small screw caps usually furnished on the regular five-gallon honey-cans.

Those who read the article by "Common-sense Bee-keeping," in the Nov. 19th, 1903, *American Bee Journal*, will remember how that writer tells of putting four to six such cans of honey in a tank, and boiling water around them until the honey was liquefied; how the honey expands until the cans will not hold it, and how he was "compelled to fritter away with a teaspoon to save some of the honey, while the cans are running over and some of the honey wasting." He also insisted on the necessity of two handles on each can, owing to the fact that the present handles are so weak that they pull off or out, sooner or later.

I admit that larger screw caps and two handles would be desirable improvements; but as the next best thing, the two implements now to be described will save "Common-sense Bee-keeping" (and others) all or most of his hard work and loss of honey.

The first is a tin tube of such diameter that it will easily pass through the usual screw cap. In and out at the lower end of this tube is soldered a disk of tin, with a  $\frac{3}{8}$ -inch hole in the middle. The disk would completely close the lower end of the tube, except for the  $\frac{3}{8}$  hole.



When your honey begins to expand, and the liquid to appear at the screw cap, push this tube down into the hot honey; let it fill as far as it will; clap your hand tightly over the large opening at the top of the tube; lift



out the tube, and hold it quickly over a pail and allow the honey to run out by removing your hand from the upper end of the tube. Or a long stick may be whittled at one end so you can plug the  $\frac{3}{8}$  hole at the bottom of the tube, say a stick  $\frac{3}{8} \times \frac{3}{8} \times 15$  inches. The process can soon be repeated, until you have removed enough honey so you know that the honey in the cans can not run over.

Now, if you are impatient we have a quicker plan of doing this work; but don't tell any one. Apply your mouth to the top of the tube and draw the hot honey up two-thirds of the height of the tube—that's quicker! An old bicycle foot-pump could be remodeled so as to do this much better and easier. Make such a tube, use it, and you will be surprised at the amount of honey saved.

The other device is to use in lifting cans of honey in or out of the liquefying tank without danger of pulling off the handles. Get two pieces of sheet iron or galvanized iron, about  $2 \times 40$  inches, and bend as shown. Nail three or four strips of wood  $1 \times 2 \times 10$  across the bottom to hold the strips of sheet iron in place, and to support the weight of the honey, allowing water to circulate under the can when in the tank. At the upper ends of the strips of sheet iron nail cleats  $1 \times 1 \frac{1}{2} \times 10$ , as shown. Clinch all nails well. Tip or lift your can of honey; place the "lifter" under; seize the upper cleats, and lower all into the liquefying-tank. When liquefied, lift it out in the same manner.

Have as many of these lifters as you can use in the tank at one time.

Mr. E. D. Townsend recommends leaving the screw caps on tight when liquefying, to retain the aroma. I should be afraid that occasionally a can might burst. But if you do follow his advice, don't open the cans until the honey is cool again, or it may fairly *explode* as you unscrew the cap, and burn you, besides daubing your clothes. Twice I have had this happen.

Meridian, Idaho.

### CONFINED AIR.

#### Its Importance in Hives in Bee-cellars.

BY T. F. BINGHAM.

The prevalent plan of arranging hives without their bottom-boards alternately, instead of above each other, of course precludes the possibility of accumulating one by one the bees that just naturally die, and perhaps would remain, many of them, on a bottom-board were one there, may have objections far more weighty than the supposed gain in not having a bottom-board. I am aware that open-bottom hives in cellars are the popular fad, and may be for once the plan has more than popularity to recommend it. However, in my cellar, which is special and dry, some experiments were tried with small entrances and the summer bottom-boards. They wintered as well, and I thought perhaps better. So well pleased was I that I remodeled my stands or cleated bottoms by closing

them on three sides—that is, the bottom, or stand, is composed of a board the size of the hive; on this thin board are two two-inch-square strips or cleats, one on each side, on which the hive rests. To the rear end is a board nailed to the square pieces so no bees can escape at the back side or end. This makes a three-sided stand on which the hive stands.

To close partially the fourth side or front I roll up a roll of excelsior in paper, two inches in diameter, and tie with twine. I then cut off each end square so as to be  $\frac{1}{2}$  inch shorter than the open side of the stand and crowd it in. You will note that the  $\frac{1}{2}$  inch shorter than the opening would leave an opening at one corner, from which bees wishing to could escape, at the same time admitting sufficient air. Of course, this arrangement enables the bees to raise the temperature of their hive readily if they wish so to do.

The fact that bees cluster below their combs is not evidence that it is their normal condition, nor that it is favorable to their welfare. It is, rather, an effort to keep out the air and thus conserve heat, which is no less essential in a cellar than elsewhere. The plan I have adopted allows a reasonable death-rate accumulation in the bottom-box, as I will for distinction call it. While it secures a sufficiently closed hive to enable the bees at any and all times to raise or maintain a higher degree of temperature, and more vitalized air than the average air of a bee-cellar, I presume a higher temperature throughout the hive will exist or prevail, and that the death-rate will be less, and that the consumption of honey will be less, and the bees more comfortable.

In my experiment with the box bottom-board, 21 colonies were left without the excelsior entrance, leaving the bottom closed on the two sides and back; but the front had an opening  $9 \times 2$  inches. Finding that the bees in many hives having the closed entrances extended their cluster down to the thin board, two inches below the frames and against the excelsior roll, the 21 previously left open were provided with the same excelsior entrance. These entrances were put in carefully so as not to disturb the bees, and left a week for further observation.

The previous change in the cluster above noted took place in the later 21 similarly treated. This plan may have a very important bearing upon the wintering problem in depositories or on summer stands. I have four colonies in a large crockery-tierce out in the yard, sitting close together in a square. Under each hive is a box bottom-board as above described. Underneath these four bottom-boards a six-inch space is packed with dry leaves, while above and around the four hives fine hay is packed closely. The same room for the falling of the normal waste, you will note, is provided for out in the tierce that is provided in the cellar. Thus far, Jan. 19, no bees have come out of the four hives in the tierce, as the cold has been steady, and nothing to induce them to fly. I

expect to find the four colonies strong in the spring.

There is one feature in the cellar, not existing in the tierce, though the hives are the same, and bottom-boards also; namely, the accumulated warmth of the lower hives contributes to the modification of the air in the hives immediately above them, and so on without loss to as many hives as may be above them. The expanding of the clusters downward, and also the broadening of the cluster, at once apparent and continually existing, seems to justify the conclusion that, by this plan, colonies of bees become more independent of the average temperature of a depository, and, as a consequence, approximate more closely to their normal condition.

I need not state that this accumulated heat is of great value; in fact, even though the hives are covered with one  $\frac{1}{4}$  pine board and the  $\frac{1}{4}$ -inch box bottom-board, some warmth or heat pervades them, as is apparent by the expanding cluster when as above confined and utilized.

It is well known that bees wintered in box hives, however well protected, if moisture is found in the hives it is at the upper corners or edges of the hives. Especially is this true of long-framed hives. That part of the top against which the bees cluster keeps dry, while the ends of the frames do not.

My experiment may be verified even this winter by other bee-keepers if they at once make a start and put a few hives in similar positions. In one respect, not many will be able to demonstrate to satisfaction, for the reason that most bees have large empty combs between which to cluster, so they do not occupy the lower edges of the combs, while no spare empty combs are left with my colonies on which to cluster, which fact necessitates the lower clustering.

Farwell, Mich.

[Our correspondent, as he says, has departed somewhat from the path of accepted orthodoxy in this matter of ventilation of cellar-wintered colonies. He does not say what is the temperature of his cellar, although in an article on page 367, April 1, 1905, he speaks of the temperature in this same cellar going as low as "about freezing during the last two weeks of January and the first three in February, and I'm not worried about them."

With such a low temperature, even a part of the time, and a low temperature (though higher) at other times, it would no doubt be advantageous to have the entrances all but closed. But in a cellar where the temperature prevailed around 45 and going as high as 50 or even higher, such an arrangement would, we should fear, bring on disaster with the average bee-keeper. The problem in most cellars is not to keep the bees warm enough, but cool enough to prevent too much activity. It has been our experience that, with the open bottoms, the bees hang down in a large baggy cluster, not to close up the opening, but to get more and better air. A warm cellar with the mercury at 50 degrees will pull the bees down at the openings, and it is *then* that the open space reduces the tem-

perature *in the hive* to a point where quiet is induced. In discussing this question we need to take in all the surrounding conditions; and one of these conditions is temperature and humidity. Mr. Bingham, by the way, has a dry cellar. We should be glad to hear from others on this point.—ED.]

## PRICE OF HONEY IN GREAT BRITAIN.

BY H. J. O. WALKER, LT. COL.

As one who for many years has taken a personal and to some extent a commercial interest in bee-keeping, and has striven to advance it in his own country, I can assure you that your estimate of the price of honey in London and the provincial towns of England, p. 1556, 1906, is quite above the mark. Excellent bottled honey, either from pure clover or from mixed sources—and between these the buying public is not quick to discriminate or make a preference—can be bought in the best shops at from 9 d. to 1/. Comb honey is hardly ever offered except in the form of 1-lb. sections, and it can also generally be bought retail at the above prices. A poor season may raise the price a little, but in any case  $1\frac{1}{6}$  would very seldom be reached. I must make an exception in the case of honey that has taken prizes at well-known shows, especially sections which may be bought on their special merits or to show again where the rules of other shows permit it. The ordinary price in bulk obtained by a skillful bee-keeper is 6 to 8 d. in bottle, and 7 to 10 d. in sections glazed or otherwise cased. There are men here and there who have managed to make a name and who get higher prices, generally in a local market or to special customers, but the above prices are almost universal for English honey.

Genuine heather honey from Scotland or the north of England is on a different footing, and commands fancy prices—partly on its merits, partly from sentimental associations, and partly because the season in the north for such late-blooming bee-forage is short and precarious, and supply often falls short of demand. Eighteen pence is not very unusual for section honey gathered from ling (*Calluna vulgaris*), the heather of the grouse moors: two shillings would be a fancy price. This honey, although varying according to localities, is generally of a deep reddish-golden color and almost jellylike consistency, so that, when ripened in frames, it can not be extracted mechanically, and the combwork must be sacrificed, and when pressed out and bottled it remains full of bubbles, which spoil its appearance, hence it is usually sold in sections. Earlier in the season, honey is gathered in the south of England from the more showy bell heathers, *Erica cinerea* and *E. tetralix*. It is darker and more fluid, with a less pronounced heather flavor; and, though sometimes sold at north-country prices, it can seldom be gathered pure enough to rank as heather honey.



The popularity of Scottish heather honey is very great, yet there are people who dislike it, and more, among whom I myself take rank, who like it at first, but soon tire of the flavor. To enable you to judge for yourself, or to renew your acquaintance with it, I have the pleasure to send you a sample section of the real thing from over the border. If your bee-keepers can match it from any source, they may succeed in obtaining something like the high price you seem inclined to expect; otherwise I feel sure that the expectation of finding so good a market, even in the prevailing absence of tariff obstacles, will meet with disappointment.

The section of honey was posted this day, Jan. 19—parcel post—in a tin box, and I hope it will travel safely and not granulate, although it may do so, as the season is advanced. I do not send it to you as a pattern section. It was the last I had of some that a friend had sent me—a good bee-keeper. The quality of the others was very good, and this should be the same.

Leeford, Budleigh Salterton, England.

[Perhaps the impression that we conveyed in regard to the price of heather honey was a little high; but we based our information on a controversy that appeared from time to time on this subject in the *British Bee Journal*, in which it was shown that the best lots of heather honey were selling all the way from 1 shilling 6 pence (36 cents) to 2 shillings (48 cents).]

The sample of honey came duly to hand and in remarkably good order. This may be accounted for by the fact that the honey itself is very thick and the comb well filled. Before sampling it we had a photo taken, and the same will be reproduced at another time. It appears to be put up a good deal like much of the so-called British honey—that is, in cartons. If glassed in this shape, of course it will bring more money. On holding the section up to the light it seems to be of a light purple color. The flavor, while a little peculiar, is very pleasant. It is like some other honeys, which, when their flavors are well known, no other honey will be taken.

—ED.]

### CAUCASIAN BEES.

**Bad Propolizers; Very Irritable when Crossed with Italians: a Laughable Case in Point.**

BY J. G. BAUMGAERTNER.

Seeing your account of Mr. Frank Rauchs' experience with Caucasians, in *GLEANINGS* for Dec. 15, I am prompted to say something about these bees again. I sang their praise in one of the issues of *GLEANINGS* in 1906, after having had one colony of them during the summer of 1905, headed by a queen from the United States Department. I handled a number of Caucasian queens the past season, reared from imported mothers

by a Southern breeder, selling some and keeping the rest for my own use. Several of these queens produced bees quite as gentle as those from the queen mentioned above; but there were a few which, I think, had mated with Italian drones, as the majority of their bees had three yellow bands, which were worse stingers than any hybrids I ever came in contact with. The fact is, several times they came very near driving me out of the yard, to the amusement of a deaf-and-dumb man standing at a safe distance enjoying the sport. It was this way: I took it for granted that Caucasians don't sting; and up to that time they had never stung me; but one day, while working over a colony of them I pinched a bee, and it gave that peculiar sound bees always give when in agony, and that seemed to have been the signal for a general onslaught upon the intruder. There I learned that Caucasians were not stingless—at least not the first cross of Caucasians and Italians, which I think these were. They crawled all over me, got under my veil, crawled under my vest and up my back, and even up my shirt-sleeves. Well, we "had it out" together a few minutes, when I pulled my veil-string tighter, resumed my former dignity, started up my smoker, and proceeded to impress upon their little minds that I still considered myself master of the situation, and demanded submission. But, not they. I smoked and they—*peppered*. It was something like a little Russian-Japanese war, judging from the gesticulations of the deaf-and-dumb man when he related the incident to his father. The same welcome I repeatedly received from them, and there were three more colonies nearly as bad. I noticed that the cry from a maimed bee infuriated them instantly. It was so noticeable that I once remarked to Mrs. Baumgaertner that, if the size of ears were determined by the manifested degree of the development of the sense of hearing in bees, I should be inclined to brand those Caucasians the mules in beedom.

From these experiences I conclude that the introduction of Caucasian blood will not always tend to quiet the temper of other races of bees, as some suppose, and my experience is substantiated by that of others. For instance, Mr. J. J. Wilder states in the *American Bee Journal*, "Their cross with the Italians is spiteful; but with the blacks their temper remains about the same."

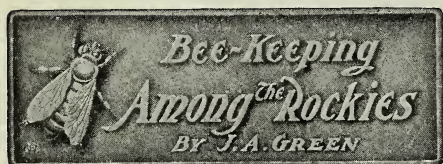
I find them good workers, but better propolizers. In the fall they are equal to the task of closing an entrance one inch deep by the width of the hive. That, by the way, seems to be their favorite place for depositing their glue. They also like to build bridges from the bottom-board to the bottom-bars of the frame, even if that space be a full inch, as with some of my hives.

New Memphis, Ill.

[That is right, friend B. Let us have the truth come out about the Caucasians. As the country has been pretty well Italianized it will necessarily follow that Caucasians in-

roduced into a new locality will result in crosses between Italians and that blood. We shall be pleased to know if any one else has had a similar experience with Caucasian hybrids. There is one thing wherein they excel all other races, and that is in propolizing.

In a talk with Mr. J. B. Hall, of Woodstock, Ont., at his home recently, he reiterated what he had previously said in public; namely, that, in his estimation, the Caucasians were a very undesirable race. They were gentle, according to his experience, but inferior to other bees as honey-gatherers.—Ed.]



[This department did not reach us until it was too late for its regular place in these columns, and so we accordingly placed it here. We are making an effort to get our journal out earlier, and not all of our correspondents have been advised in time of the change. Mr. Green was one of them.—Ed.]

#### MICE AND HONEY.

There has been quite a discussion lately in the *American Bee Journal* between Dr. Miller and E. E. Hasty as to why mice eat honey. Mr. Hasty claimed that mice do not eat honey as an article of food, but out of mischief, or only as a sort of relish, and was inclined to the belief that mice would never eat honey if water were accessible, unless possibly they were starved to it. The theory that mice eat honey for the sake of relieving thirst is not new, as it has often been advanced before. I think it is hardly tenable. I have known mice to do a great deal of damage by gnawing the cappings off of comb honey in a building on the ground floor with a stream of running water within twenty feet on one side and within eight feet of the other side of the building. This in the summer time, with nothing to prevent the mice from getting all the water they wanted by simply going a few feet. It has often looked to me as though mice gnawed the capping off of comb honey out of pure mischief; they did so much damage without appearing to do much with the caps gnawed off. But I think the fact of the matter is that mice are fond of honey, or at least readily acquire a taste for it, but they rather prefer it somewhat diluted. The caps they gnaw off, with a slight flavor of honey on them are to them what chewing-gum is to a schoolgirl. But if other honey is kept out of their reach they will gnaw deeper and deeper until I have known them almost to finish a comb of honey. They do not always confine themselves to comb honey either, nor is the starvation theory a good one. I have frequently known them to gnaw candied extracted honey, and only

lately I saw a piece of candied honey that had been considerably gnawed by mice in a pantry where plenty of other good things to eat were accessible.

#### THE BACTERIA OF THE APIARY.

I have just been reading "The Bacteria of the Apiary." While much of it is to a large degree technical, and of little interest except to the bacteriologist, the careful gleaner can extract many things of interest to the ordinary bee-keeper. One of these is the number of bacteria that ordinarily infest healthy bees and combs, over a dozen species having been isolated and studied. One of these, which occurs quite constantly, is believed by the author to have been mistaken by many investigators for *Bacillus alvei*, the cause of European foul brood. All these have been found on only a comparatively few specimens of bees and combs. If bees and combs from a larger territory were studied, it is possible that this list might be greatly increased. It is somewhat difficult to isolate and positively identify these minute organisms. The author states, for instance, that it is impossible to distinguish by the microscope alone between the bacilli causing European and American foul brood. Most of us will agree to the probability that some of the earlier investigators may have mistaken some of these innocent or comparatively harmless bacteria for those that produce disease.

#### HOT-WATER HEATERS FOR HONEY-TANKS.

Some one told us a year or so ago how to make a hot-water heater for a large honey-tank. I made one last spring, using an ordinary two-burner gasoline-stove as a source of heat. It worked like a charm, raising 2000 pounds of honey from 65 to 100 degrees in 48 hours. This winter it performed the still more difficult task of melting about 800 lbs. of honey that had become candied hard in the tank. Wouldn't I have had a job if I had been obliged to dig that honey out? Only those can appreciate what it would have been who know how hard and tough Colorado honey can become when a well-ripened article is thoroughly candied.

This heating arrangement consists of a rectangular tank or box as large as the bottom of the honey-tank, and 1½ inches high, closed on all sides, made of heavy galvanized iron. In the front, near one corner, is the pipe supplying the hot water, 1½ inches in diameter. From the back corner comes another pipe of the same size, which returns the cool water to the tank, in which it is heated. Between these inlet and outlet pipes the water is made to circulate back and forth by strips of wood 1×1½ inches, three inches apart. Besides forming the divisions in the heating-tank, these strips of wood support the weight of the honey-tank. From one of the back corners of the heating-tank rises a perpendicular pipe which allows for the expansion of the water, and provides a place for filling. The tank in which the water is heated is made like the other, but only large



enough to cover the top of the gasoline-stove and three inches deep. Its bottom, as it rests on the stove, is six inches below the bottom of the large heating-tank. From its top at one corner rises the supply-pipe, while at the bottom of the other corner is connected the return pipe, running on a long slant from the back end of the large heating-tank. The pipes connecting these two tanks are slightly separated where they come together, the actual connection being made by short pieces of rubber tubing (old single-tube bicycle tire), which permits considerable shifting without danger of breaking the connections. I should, perhaps, have said that the tank on the stove is not divided off inside like the other, only a single partition running most of the way through the center. This supports the top of the heater, which is an excellent place to warm cans of honey.

Experience has shown me that, with our thick honey and cool nights, some method of heating the honey in the large tanks is an absolute necessity if we would have the honey free from specks of comb. Unless the tank is filled with honey while it is all warm, the small specks of wax carried down into the cold honey never rise again until the honey is warmed to a proper degree. Honey should not be considered marketable until all these specks have been removed.

#### DOUBLE BOILER FOR BOTTLING HONEY.

It is a familiar fact that, to bottle honey so that it will remain liquid for any length of time, it should be sealed up while somewhere in the neighborhood of 160 degrees. For most bee-keepers it is more practical to heat it to the right temperature before it is put into the jars or bottles. It is likewise advisable to keep it at this temperature for some time. With ordinary appliances it is not easy to heat honey, and especially to keep it at any definite temperature without considerable danger of scorching it. A double boiler of some kind is almost a necessity. Those who make a business of bottling honey have elaborate appliances of this kind, some of them costing a hundred dollars or more. The ordinary honey-producer, who can not afford such an outfit, is apt to conclude that he must do without any thing of the kind. A very satisfactory outfit, when only a moderate amount of honey is to be bottled, may be made out of two galvanized wash-boilers, a No. 8 and a No. 9. The smaller size will go into the larger one nicely. Wash-boilers vary considerably in size as made by different manufacturers, and you may have to hunt some to find a pair that will go together with a sufficient amount of room between. If you can not find a pair that go well together, you may have to have one made, though you can buy them much cheaper ready made. Solder V-shaped strips of heavy galvanized iron to the bottom of the inner boiler to keep it at least half an inch above the bottom of the other; brace and fasten the sides well together, and solder in a molasses-gate, extending into the inner

boiler. A small cock to draw the water off from the space between the two is a convenience, though not absolutely necessary. The complete outfit can be made for about \$3.00, and it will do as good work as any.

#### HOW MUCH ARE BEES HINDERED BY QUEEN-EXCLUDERS?

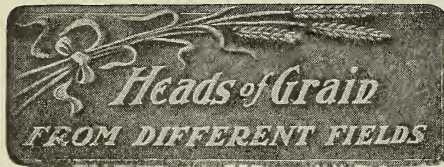
The point brought up by G. C. Greiner, on p. 107, would be exceedingly important if it should prove that he is correct in his claim that queen-excluding zinc as lately manufactured is the cause of a greatly reduced honey yield in every apiary where it is used. I have been using queen-excluding zinc for a number of years, practically ever since it has been on the market, and have bought a number of different lots of it at different times since then, besides making considerable of it myself. I probably have in use more or less of all the different sizes of perforations that have been made, though I have sold off most of the earlier makes and replaced them with the later patterns. I have now in use nearly two hundred of the latest make of queen-excluders, with material for making up as many more; and if I have been making a mistake, I should like to know it.

My system of managing bees is such that I find queen-excluders a practical necessity during a large part of the season, and I do not look as complacently as Mr. Greiner does on the queen that finds her way up through the excluder. I have not been as successful in keeping the queens down as he appears to have been. Nearly every season I have had from one to a dozen cases where the queen has started brood in the supers, and I consider it a very undesirable nuisance. Nor is it always as easy as he would have us believe to restore matters to a normal condition. I remember distinctly putting one queen downstairs on three separate occasions last summer, and she would probably have continued to go up through the excluder as often as I put her down if I had not exchanged the old excluder for one with smaller perforations. Annoying and time-wasting as such things are, I could easily put up with them if I thought it would make any perceptible increase in the honey crop to use the larger perforations.

While my attention has not been specially directed to this point, I have not noticed any difference whatever, although I had over a hundred of each size in use the past season, and I think I should have noticed it if there had been any. There have always been those who have claimed that any queen-excluder lessened the crop by hindering the bees in their work. After my bees are well at work in the sections, there is no longer any need of the queen-excluding honey-board, except as it prevents brace-combs. Accordingly I have often removed the excluders from part of the hives at such times.

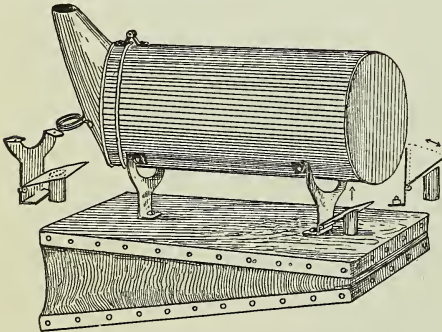
It seemed only reasonable to suppose that they would do at least a little better if they were out of their way. But I have never been able to discover that such colonies did

any better work whatever in comparison with those on which the excluder was retained; and I have been forced to the conclusion that, in a good yield at least, it is no hindrance whatever to the bees.



#### HOW TO PREVENT SMOKE FROM ENTERING THE BELLOWS.

I had one of the Corneil smokers, and had not used it very long before I noticed the smoke that is drawn back when the smoker was standing or hanging on the hive, which it often does, caused the bellows-board around the blast-hole to become blackened and charred by the heat and smoke. I tried an experiment to see if I could not prevent the heat and smoke from entering the bellows by tacking a light strip of leather a distance from the small hole and letting it cover the hole, acting as a flap valve. It was not very successful, as I had to work the bellows with more force to get enough of a blast to do the work, and in a few days the heat and smoke had it charred and crisp so that I had to take it off.



I figured that, if such things continued, I should soon have my bellows ruined, as the life of the old Corneil or Bingham was one season with me, while I used one of your Crane smokers with check valve for three seasons, and the bellows was fairly good at the end of that time. The fire-box had burned out. I set about to invent some kind of device to help matters, and I solved it by making a device as you will notice by the enclosed drawing. I get just as strong a blast as I did before I put it on, and it prevents the heat and smoke from entering the bellows, and is impossible to foul or clog.

Tempe, Ariz.

L. E. REDDEN.

[With the older smokers, that is, those with a valve in the bellows to let in the air, this

device ought to work satisfactorily, and would be of much value, especially if fine fuel were used. But with the new valveless smokers, in which the air passes back through the blast-hole, such an arrangement would not work, for the reason that it would prevent the bellows from filling with air. And with the new blast-tubes there is almost no complaint, for the reason that the tube extends so far up into the fire-box that practically no sparks can be drawn back into the bellows.—Ed.]

#### THE NORTHERN CALIFORNIA BEE-KEEPERS' ASSOCIATION.

It may be of interest to some of your readers, especially for those of this coast and the State of California, to know or to learn that there exists a Northern California Bee-keepers' Association whose object it is to promote the welfare of the bee-industry in the whole of northern California. This association held its second annual convention in Sacramento on Jan. 28 and 29, which was attended by about 20 members coming from a good many counties north of the Stanislaus River. Prof. J. M. Rankin, of the Government Experiment Station, at Chico, addressed the assembly on various subjects which were discussed at some length.

The supervisors of Sacramento County were petitioned to appoint a foul-brood inspector for the county, and the members from other counties were advised to follow that example in their respective home counties. The members present agreed to sign a contract not to sell any honey for less than the figures fixed by the executive board of the association. They indorsed and approved the work done for our industry by the experiment station at Chico under its present manager, Prof. Rankin.

After receiving the reports of its officers, and approving the work done by them, the election of officers for the ensuing year took place, whereupon the convention adjourned, to meet again in a one-day session on June 24, 1907.

Any one interested in our association, which is a branch of the National Bee-keepers' Association, can get further information from our Secretary, Mr. B. B. Hogaboom, Elk Grove, Sacramento Co., Cal.

Stockton, Cal.

SEBASTIAN ESELIN.

#### A CASE WHERE IT PAID TO FEED.

In July and August, as we have very little yellow and white sweet clover here, there is no honey coming in—not enough, in fact, to keep up brood-rearing fast enough to have strong colonies for the fall honey-flow, which commences about August 10. Well, I fed those colonies every evening, about dusk, just enough syrup to stimulate them sufficiently to rear brood pretty fast; then when the honey-flow opened I had colonies just boiling over with bees. I got over 1700 lbs. of honey from 30 colonies this fall, and put them away heavy with honey for winter. Those that we did not feed got very little if



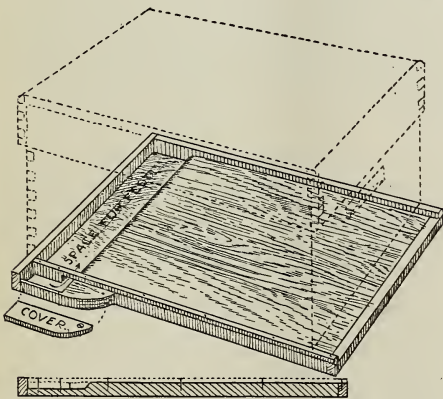
any honey. Every one knows this was a poor year for honey, there being only two weeks all told when the bees got any surplus; and when the asters came in bloom sufficiently to give any surplus the rains set in and cut us out entirely of any flow from them. I have also scattered white sweet-clover seed over about 80 acres of waste land. I see it blooms during our honey dearth; and if I can cut out feeding, and also get a surplus from it, it will be just like killing two birds with one stone, and the stone can be used year after year, without getting smaller or broken, but will be getting harder and harder every year. Yes, if it yields only enough to keep up brood-rearing it will pay all the trouble for sowing.

Evansville, Ind.

JULIUS HAFTEL.

#### A BOTTOM-BOARD AND FEEDER COMBINED.

The illustration shows one of my bottom-boards with self-feeding attachment. It has the advantage of permanency, which enables one to feed at any time without disturbing the bees, making it so easy that one would feed when, if he had to go to work and get



a feeder placed, he would be likely not to do so. To use it, the hive-body is slipped forward sufficiently to admit of pouring the feed in from the back, after which a strip is laid over to close the opening.

Staunton, Va.

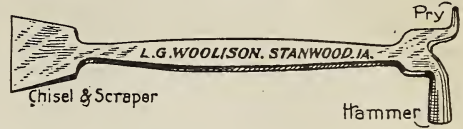
W. O. SYDNOR.

[This arrangement here shown will probably give good results. One objection is that it will be difficult to make a bottom-board along these lines that will be syrup-tight year in and year out, and another is that it would be limited in capacity. The Alexander feeders are made of one piece of wood; and any shrinking that may take place does not affect their holding quality.

The cut shows what appears to be an improvement on it since the letter here written by our correspondent was prepared. We refer to the side lip with a cover. This arrangement would make it unnecessary to shove the hive forward on the bottom-board as explained in the text.—Ed.]

#### A HIVE-TOOL FORGED FROM A FILE.

The illustration shows my hive-tool which I have made. For the past two seasons a number of bee-keepers in this vicinity have tried it and think the tool is all right. The little hook on the other side of the hammer



is intended to hook under the end of the brood-frame between the tin rabbet and the outside of the hive end, using a hammer on the remaining frames as a pry to raise and loosen the brood-frames. The bit is  $1\frac{1}{8}$  in. wide, which will scrape a  $1\frac{1}{2}$  section at one stroke, and is very useful for prying off and scraping covers. It is forged from one piece of steel, and highly tempered.

Stanwood, Ia.

L. G. WOOLISON.

[We tested this hive-tool in our apiary during the past summer. As a general pry for loosening the cover from the hive-body, it is excellent; but we found it rather heavy and large for the purpose of prying the frames apart. A much smaller tool we consider preferable.—Ed.]

#### THE WAY ANTS ATTACK BEES.

In a sample copy of GLEANINGS received some time ago I saw an article regarding the death of bees caused by ants, etc. We have some flies and ants here that destroy bees at times. You will notice the bee I send you was caught by an ant. The head still hanging to the bee shows the bull-dog tenacity of the ant, and also shows that the bee can defend itself to some extent. The head of the ant did not interfere with the bee's natural labor, as it had been doing its duty in food-gathering some time before I chloroformed it to forward you.

Uvalde, Texas.

E. N. FRANCIS.

[We examined the bee sent by our correspondent, and were interested in noticing the head of the ant still clinging to one of the bee's legs. It evidently would not let go, even when pulled to pieces by that bee or some other one.—Ed.]

#### SOFT CANDY SAVES ELEVEN STARVING COLONIES.

January 1, being so warm that the bees were flying freely, I looked into the hives and found them almost without feed. I ordered honey from a dealer, and it was lost by the railroad company. I ordered again, and it came by the same route. I became frantic, and, being a railroad agent myself, I kept the wires hot tracing that honey. I couldn't sleep nights, for I knew my pets were starving. I tried soft syrup feed, and it was not good, for the bees would fill their combs and then cluster some place else. The dampness from such feed made the bees wet, and it was only luck they did not freeze.

Finally I began to search GLEANINGS, and found your instructions how to make candy, and how to put it in. I followed instructions, and placed good warm quilts over each chink, and was surprised at the result. Eleven colonies starving to death in January came out good and strong in April, and while working on the willows they struck the alighting-board from 68 to 132 per minute. I took 1576 pounds of comb honey from 11 colonies, and received 20 cents per pound for all I sold. F. E. STARKEY.

Boelus, Neb., Nov. 20.

#### CANDY FOR WINTER FOOD MADE IN A DIFFERENT WAY.

I read in GLEANINGS, Jan. 15, about Dr. Lyon and yourself experimenting with winter feeding. I am surprised to find no writer who makes candy as I do. I use granulated sugar and water, just as others do (but I do not stir it) and run it into greased pans when it is just right for making good taffy. In a few days it granulates and is as solid a wax cake as yours, but they are full of thick syrup. I lay it over the cluster, and the bees soon take the syrup all out. When I examine again I pour some water on it. Those cakes are so porous that they readily absorb water, and that saves the bees from hunting water every time they take a flight. I use these cakes on all colonies, whether short of stores or not. Sometimes there are streaks of taffy in them when I put them on the hive, but it granulates there, and is all right.

Royal, Ill. B. D. HALL.

#### CANDY FOR BEES; MORE INFORMATION WANTED.

I am much interested in your discussion of candy for winter feeding, pp. 83 and 98. I wish you would say how much water you use per pound of sugar, how long you boil it, and the temperature of the mass when you stop the boiling and turn it out to cool.

I am guessing that the result depends on the three factors named. The more water you use, and the longer time you take to boil it, the more of the sugar will be inverted, and the more of the sugar that is inverted the more hygroscopic it becomes, and the harder it will have to be to stand up in the humid atmosphere of the hive. The temperature determines the hardness.

When you tell us to cook it till it grains readily when stirred, you leave the final result quite indefinite. I think sugar can be made to grain when it contains so much water that it would not remain firm in the hive. The result from any given boiling temperature of specified quantities of sugar and water would be quite exact, and could be duplicated by any one.

The same ideas apply to making syrup for feeding late in the fall. It should be easy to determine the proportions of sugar, water, and tartaric acid, that, boiled to a certain temperature, would not candy, although made to weigh 11 pounds per gallon, if one would make the needed experiments.

Solon, Maine. TURNER BUSWELL.

[As to the quantity of water to the sugar, that depends very largely upon the state of the atmosphere and the intensity of the fire on which the syrup is to be "cooked." Roughly speaking, four dipperfuls of sugar to one of water will give the right proportion. Just enough water should be used so that all the sugar will be dissolved when the mixture has just come to a boil. If it is still cloudy when it is boiling, add a little more water. While it is being dissolved it should be stirred.

The next question is, How long should it boil? Well, as the candy-makers would say, until it comes to a "crack;" that is to say, dip your finger into cold water, then into the hot syrup, and then *immediately* back into the water. If the mixture has cooked long enough, the film of hard cold syrup will "crack," upon the fingers. If it has not cooked long enough it will be soft. It may be necessary to make two or three tests before the cracking-point is reached. The syrup should then be taken off the stove.

We omitted to state that about half a teaspoonful of cream tartar dissolved in a little water, or, if preferred, one pound of honey to ten pounds of sugar, should be put in when the sugar and water are first put on the stove. The purpose is to keep the candy in a hard state so that it will not go back to the granular form, rattling down between the frames when the bees start to eat it.—Ed ]

#### NO BEES ON ALFALFA.

I watched two alfalfa-fields the past season, one close to North Manchester, Ind., and one in Whitley County, Ind. Not a bee could I see working on either of them.

North Manchester, Ind. S. F. MILLER.

#### GOOD FOR WASHINGTON, D. C.

We take unusual pleasure in submitting the following clipping from *The Woman's National Daily*, because Congressman Webber was a Medina boy, born and educated in Medina Co., Ohio.—A. I. R.

#### WILL STORM CONGRESS.

A most determined effort is being made to do away with the selling of liquor in the District of Columbia. As previously stated in these dispatches, Congressman Webber, of Ohio, introduced a bill last year to wipe out the saloons in the city of Washington, which is practically all of the District of Columbia—the seat of the national government. There are upward of 800 places in which drinks can be bought during the hours the licensed concerns are allowed to keep open.

Congress has been slow to act on the various bills that have been introduced for the suppression of the liquor-traffic here. The members of the large number of anti-drink associations are, however, organizing a sensation. They have been unusually active during the winter. They have been promised that they will get a hearing on the 14th of the present month. That is St. Valentine's day. They are preparing to invade in great numbers the big white capitol building. A combination of the different societies is now called the "Prohibition Crusaders of the District of Columbia." Their plan is to have no less than 10,000 men, women, and children gather in and around the capitol building on the 14th, and demand of the legislators that the liquor business at the seat of government shall be wiped out of existence.





Behold the fowls of the air; for they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them.—MATT. 6:26.

Create in me a clean heart, O God, and renew a right spirit within me.—PSALM 51:10.

So far in my experiments with poultry reared entirely without shelter, nature's way, or, as I prefer to put it, *God's* way, it seems far ahead of man-made incubators and brooders. The chicks hatched under the hen were more robust than those hatched in my 10-lb. incubator; yet in justice to the latter I will say that the most of them now, at about six weeks of age, are very much alike. It was pretty tough for a while for the incubator chicks, especially those hatched a few days later, to keep up with the mother hen in her rambles about the island, especially cool mornings; but in answer to their plaintive peep she rested and brooded them; and with plenty of wheat where they could always find it they soon became strong and robust. There was one chick (from the first egg laid by the White Leghorn pullet) that was almost a week younger than the rest. He had such a hard time keeping up with "the procession" that I used to pick him up and warm his little toes in my hands. I soon found, however, this would not do, for he followed *me* instead of the hen, and he got to be quite a nuisance, for none of us wanted to step on the little bit of down. Sometimes I would think I could get away from him by walking very fast or running; then I would look back, and, not seeing anything of him, conclude he had gone back to the hen; but again and again I would find him just between my feet. It is truly wonderful how they can make those tiny legs spin. For a week or more it seemed as if he would hardly make a live of it, especially after I had stopped "cuddling" him; but yesterday I picked him up and was pleasantly surprised to find him a vigorous, strong-limbed, handsome fellow, equal to any of them, only a little younger.

Now, friends, I know I am treading on ground gone over and over by thousands of experts, yet I give it as my opinion that it will be very hard to invent any plan whereby we can by artificial means give the chicks from an incubator any outdoor exercise *fully equal* to what they get in following a hen. She, under God's direction, gives them all the exercise they will bear; and when she knows by their plaintive notes they are tired or chilly she gives them the very best *rest* and *warmth* the world has ever invented. I know there are great establishments that grow the finest poultry by the thousands, at least they claim they are equal to any, and

that without hens at all; but I am so incredulous that I have planned soon to visit some of the best in the world; and then I will tell you about it. Just now it seems to me the mother hen will, here in this Florida climate, not only do the work *better* but *cheaper*, and I have seen chicks reared in brooders at the same time ours here on this island were running wild, or under God's care, as we have it in the first of our texts. I have proved that a hen can take charge of 30 nicely, and I opine she would manage 40 or even more just about as well. Of course, she can not cover so many; but there are always tough ones in every flock that prefer to stand outside or run about and not be brooded. As I have said, not a chick was lost that went from the incubator to the hen mother; but when I undertook to make the brooder take the place of the hen I had many disappointments. At one time I had eleven beautiful chicks, some of them over a week old, when one morning the whole lot seemed only sickly ghosts of what they had been the day before. Worse still, when the poor little chaps tried to walk several of them seemed, in spite of all they could do, to run backward instead of forward. Mrs. Shumard said, as soon as she saw them, that they smelled of coal oil. Sure enough, during a cool night they had pressed up against the lamp until every chick was pretty well "anointed," and then had tumbled in the dirt and black dust. You may ask what kind of brooder I had. Well, the combined brooder and incubator cost only \$6.50, and I was foolish enough to think it might do for my experiments here in this Florida climate. The printed directions said, "Don't be afraid of the chicks interfering with the lamp nor the lamp with them." The lamp was carefully wiped clean the night before when filled, but enough oil got out in some way to kill 8 of the 11 chicks. Let me say, however, to the credit of the 10-lb. incubator, that it did hatch the nineteen nice chicks given the hen, although it required a good deal of supervision when the weather changed suddenly. Since I have tried one of the *cheapest*, I am now daily expecting one of the *best* small incubators that can be bought, with brooder to match.

The lamb has, through all ages, been selected as a symbol of innocence and offensiveness; but I should place a little chicken at the head of all animated nature as a type of all that is good, pure, and lovable. Not only is there confiding innocence, but there is strength of muscle for such a little body, and life and animation, and, we might almost say, *enthusiasm* as well. Watch a strong vigorous chick as it starts out in the morning. If he doesn't enjoy life and thank God for existence I don't know of any animated nature that does. I have frightened a chick, not yet out of his shell, almost out of his little senses, and yet he is the easiest animal in the world to give you his confidence. In one brief day you can win that little confidence, and hear his plaintive little thanks for warming his little self, or for giving him food and drink when he is a little

older. They have quite a little vocabulary (the one God gave them), and I do not know any sweeter music than to listen to their baby language. In a very little time they can be taught to let you pick them up; and if you are not very careful you can almost hear them say, "Be gentle, please; remember I am so very little." I once hit with my foot the one that *would* run after me, and tumbled him over and over in the dirt. His exclamation of surprise and astonishment was ludicrous. It seemed to say, "Oh! oh! oh! how is it possible that *you*, who claim to be such a friend of poor little me, should knock me about in that style?"

When it comes to expressing thanks for any service rendered, a little chicken is ahead of the world. They are full of jokes and pleasantries. At a very early age they will pretend to want to fight with their comrades. Who told *them* about fighting? They will ape their busy mother, and try to do every thing they see her do, in a way that is truly comical. We have read that flowers have sometimes turned wicked men from their evil ways. It seems to me that any one who gets really closely acquainted with a little chick, learns that beautifully expressive little talk, and what it means, must be a better man or woman ever afterward.

This opens the way for the second of my two texts. I purchased a pretty good grade of White Leghorn rooster to put with my five pullets; and when the eggs of *his* parentage began to hatch out I was on the watch you may be sure. The chicks, sure enough, were of a golden yellow, brighter than the yellowest Italian bees. I petted them and loved them; and when, a few hours later, the shining silvery wing feathers began to shoot out (faster than plants grow in my cloth-covered greenhouse) I admired them almost every hour. Then the coal-oil episode came, and one after another I was compelled to see the little lives go out in spite of thorough washings and all that I could do. I got homesick. I don't know but I almost got the blues. I reasoned with myself, and said:

"Old fellow! you are overlooking all your many great blessings, and getting cross about the loss of a few cents' worth of chickens. While the great cities are rejoicing and thanking God for the wonderful work of Torrey and Gypsy Smith, to say nothing of the great crusade for temperance, you are narrowing your life down to this latest hobby of yours, and losing your peace of mind when, more than likely, it is God's plan, and what you need, to have a little disappointment right here.

Yes, friends, I *prayed* over it. It was, of course, not the value of the chickens, but facing the probability that they would likely *keep* on dying. I was, however, contrary and stubborn. I ordered one of the best fifty-egg incubators by express, and, to get over the stubbornness, I used David's prayer—"Create in me a clean heart, O God, and renew a right spirit within me."

I am still in favor of hens for mothers. My five pullets are one-fourth Brazilian

games, and three-fourths White Leghorns. The following extract from a letter will tell you why I want some game blood in my sitting hens:

A well-bred game hen *will* keep hawks away from her brood. She will fight away cats, dogs, or almost any thing. Not even a man can take one without a fight. I have a little game hen of only 3½ lbs. weight that fought and whipped a large-sized chicken-hawk that on two occasions had tried to catch one of her little ones. The second hawk had succeeded in catching one of the chicks, but she caught him on the fly, at least ten feet above the ground, brought him to the ground with her, and whipped him off. Some time ago I threw a good-sized hawk with a broken wing in with a pen of three hens and a cock to see the result. The cock killed the hawk in about three minutes.

WILSON WRIGHT.

Braidentown, Fla., Feb. 9.

Well, there was one *full-blood* game chick among the "oiled ones." He was a very strong lusty fellow, and he and I were *particular* friends. He told me his troubles, and I came pretty near telling him mine. He held on and pulled manfully for life, but I had to see him draw his last breath.

"FIGHTING MOTHERS."

While we are about it I am not sure but that it is the fighting mothers that are going to redeem the world. Our recent and great victories over the rum traffic are, no doubt, the work largely of fighting mothers.

An incubator weighing only 10 lbs., if a really good one could be made so light, would be a great boon because it could be sent by express, as, many times, it is very inconvenient to wait for the slow motions of freight shipments. But another consideration comes in here. I notice many of the testimonials in regard to the more expensive machines say, "No cripples in hatches from this machine." Are we to infer from this that cheap machines, or, perhaps, *poor* machines, rather, are likely to produce crippled chickens? and this reminds me that I have had half a dozen or more crippled chickens. Perhaps the Humane Society should have a word to say in regard to any traffic that tends to bring crippled animals into the world. God grant that our United States of America may have like jurisdiction over *any* traffic that shall be the means of bringing crippled (or imbecile) *humanity* into the world.

#### AN ARGUMENT IN FAVOR OF THE STAINLESS FLAG.

I still remain a bee-enthusiast, and the pleasure I have in bee-literature is added to by seeing the fearless fights you wage against the drink and other evils. In reading them and the record of the triumphs of good against evil, I myself have often been cheered, and, thanking God, have myself taken courage. Drink, however, is not our bane here. With a population of 200,000 I have not seen a case of drunkenness for some years, and the highest number of arrests I have ever seen for three months was 22. I have seen it as low as 3.

W. G. HUTCHINSON.

Boscobel, Barbados, Dec. 19, 1906.

The above gives us a most astounding fact and argument in favor of the "Stainless Flag." Just think of it! a city of 200,000 people, and no visible drunkenness! The explanation and reason for this is that there is no tax or license on liquors. The government is *not* in partnership with the saloon business.